QUARTERLY REVIEW of PEDIATRICS

Vol. 5 No. 3 August 1950

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Simple to Prepare

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Generous in Protein

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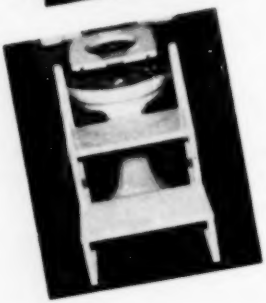
When training starts...

LITTLE TOIDEY



Whether you recommend baby be "conditioned" through the pleasant Little Toidey, before muscle control, or

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The recently developed Toddler's Toidey is particularly important for the child who starts second half of second year. It is also helpful if there has been a break in training and a new start has to be made. This Toddler's Toidey is all aluminum except that it has four suction cups on the underside of the seat so that this seat itself can be used on the toilet without the legs or the pan. This could be used as an emergency when traveling or later, when the child is two or three years old, in combination with Toidey Two Steps.

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FORT WAYNE, INDIANA, U. S. A.

Quarterly Review of PEDIATRICS

Vol. 5 No. 3 August 1950

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FOREWORD

The prime function of the QUARTERLY REVIEW OF PEDIATRICS is to make a survey, with a critical eye, of the important new contributions in every branch of pediatrics. Original reports are abstracted by pediatricians familiar with the subjects under consideration. The Editors and Editorial Board check over all abstracts and add interpretative or critical comments whenever necessary. The "Bookshelf" department reports informatively on new books the pediatrician should know about. Thus, within the covers of a single journal, there is brought together a concise chronicle of pediatric progress, well organized, reliable and complete. By exploring the entire expanse of medical literature the QUARTERLY REVIEW OF PEDIATRICS keeps its readers abreast of the most recent progress in all of pediatrics. A subscription to THE QUARTERLY REVIEW OF PEDIATRICS represents a continuous seminar on advances in pediatrics.

For convenience of reference the abstracts are grouped as follows:

1. Allergy
2. Anomalies, Genetics
3. Blood, Hemopoietic System
4. Cardiovascular System
5. Chemotherapy, Drugs, Poisons, Physical Agents
6. Clinical Pathology
7. Endocrine System
8. Eye, Ear, Nose and Throat
9. Gastrointestinal System
10. Genitourinary System
11. Growth, Puberty, Adolescence
12. History, Biography, Antiquities
13. Infectious Diseases, Acute
14. Infectious Diseases, Chronic
15. Liver, Kidneys, Spleen
16. Metabolic and Systemic Disorders
17. Milk; Infant and Child Feeding
18. Miscellaneous
19. Musculoskeletal System
20. Nervous System
21. Newborn Period, Prematurity
22. Nutrition
23. Parasitic Diseases
24. Pathology, Anatomy, Bacteriology
25. Physiology, Biochemistry
26. Psychology, Psychiatry
27. Public Health, Epidemiology
28. Respiratory System
29. Skin, Teeth, Hair
30. Social, Economic and Organizational Problems
31. Surgery, Anesthesia
32. Tumors

The Pediatric Bookshelf
New Books, Pamphlets
Announcements

Issues of the QUARTERLY REVIEW OF PEDIATRICS appear in February, May, August, and November. A cumulative index for each volume is included in the November number. Suggestions, correspondence and editorial communications should be addressed to Irving J. Wolman, M.D., *Editor*, The Children's Hospital, 1740 Bainbridge Street, Philadelphia 46, Pa. Subscriptions should be mailed to the Washington Institute of Medicine, 1522 L Street, N.W., Washington 5, D. C. Annual Subscription: $11.00. Three years: $28.00.

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New

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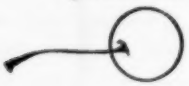
Brand of TERRAMYCIN ELIXIR

provides: **Terramycin: 250 mg. per teaspoonful (5cc.)**



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mint flavor

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the preferred dosage form for **Pediatric Patients**
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"Sensitive" patients who experience difficulty in taking the customary forms of oral antibiotic medication.

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DIVISION
Chr. Hansen's Laboratory, Inc.
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PROOF: New Johnson's Baby Lotion was subjected to clinical investigations in 8 leading hospitals for a period of more than 10,000 baby days. It reduced the incidence of skin irritations *of all types* to an average of less than 2%.

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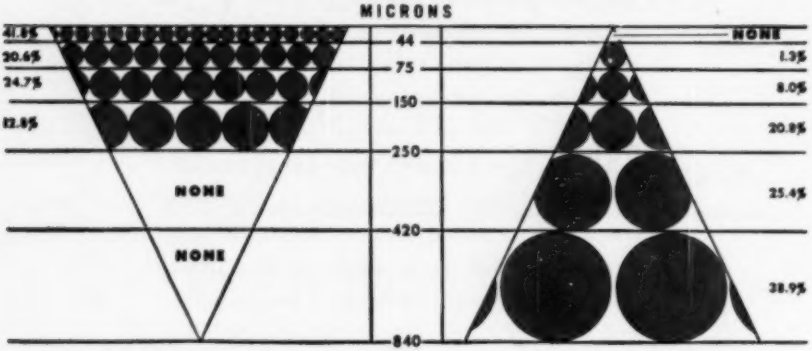
Offer limited to medical profession in U.S.A.

Particle Size

AN INDEX TO READY DIGESTIBILITY



Libby's STRAINED and HOMOGENIZED CARROTS

CARROTS MERELY STRAINED

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Thus digestion is facilitated, and utilization of contained nutrients, such as iron, is enhanced. Since cellulose fibers are comminuted to ultra-small size, Libby's Homogenized Baby Foods may be fed with safety as early as the fifth week of life and are well tolerated.* Yet this feature carries no price penalty, for Libby's cost the mother no more than ordinary, merely strained, baby foods.

**Reprints of clinical studies are available on request.*

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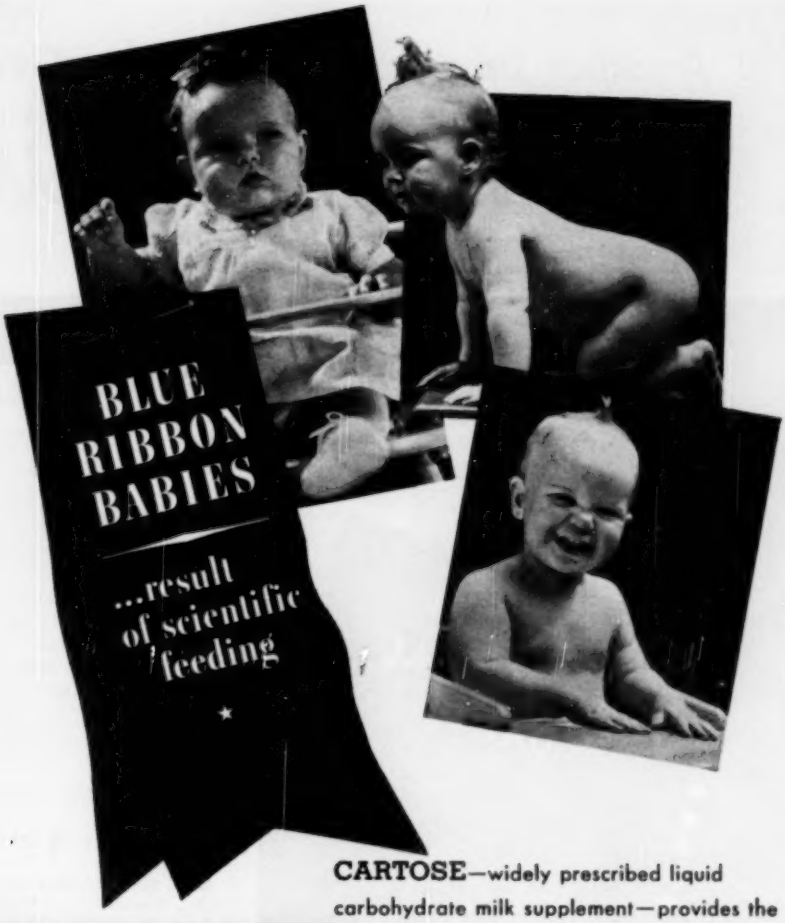
Libby's

ACCEPTED COUNCIL ON FOODS AND NUTRITION AMERICAN MEDICAL ASSOCIATION

HOMOGENIZED BABY FOODS



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Mixed Carbohydrates in Easy-to-Use Liquid Form

Compatible with all milk formulas • Instantly soluble
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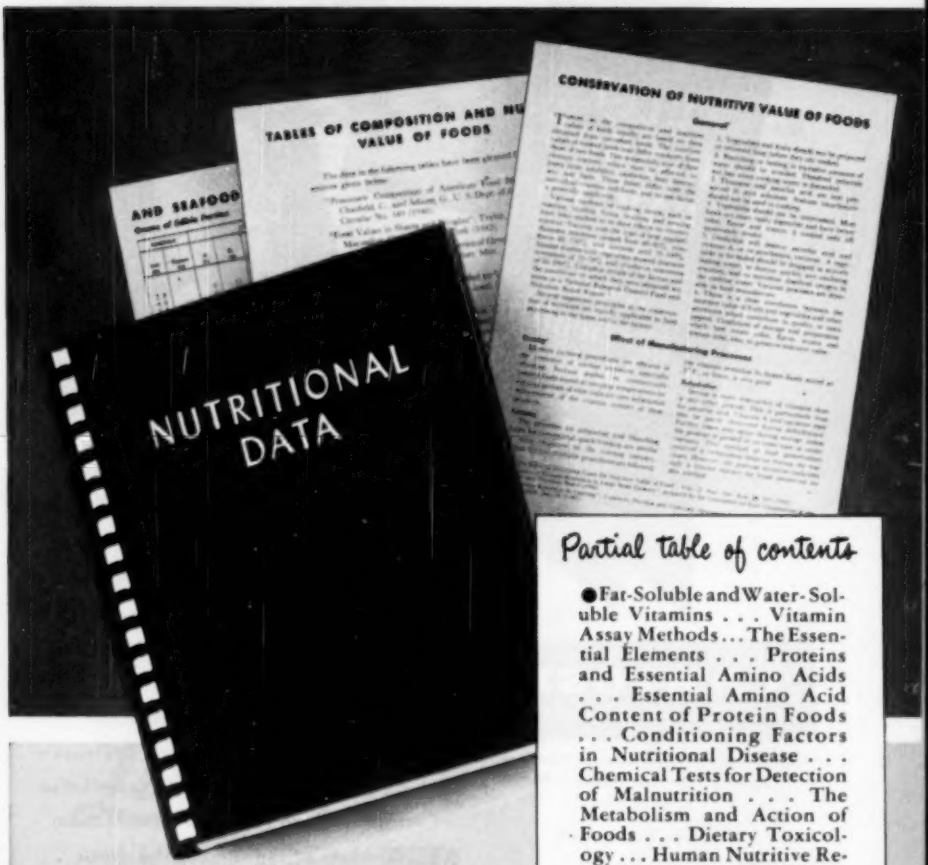

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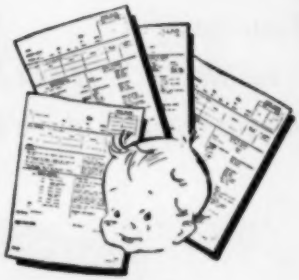
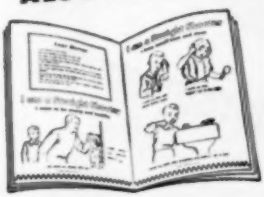


PEDIATRIC FEEDING DIRECTIONS

(birth to 3 mos., 3-6 mos., 6-10 mos., over 10 mos.)

Easy to use, complete, adaptable to individual patients. Each contains: formula or diet charts; food lists; food preparation methods; weight record; spaces for your directions, next appointment. Available in pads of 50, imprinted if desired.

ALSO...This *Gift* for your young patients



Eight-page book with pictures for the youngster to color. Emphasizes health practices and other good habits you and the mother want the child to develop. Yours—to give your young patients.

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Riboflavin	0.5 mg.	2.0 mg.
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QUESTION: *How many red blood cells are replaced due to "wear and tear"?*

ANSWER: *Approximately 25 million a day in normal people*

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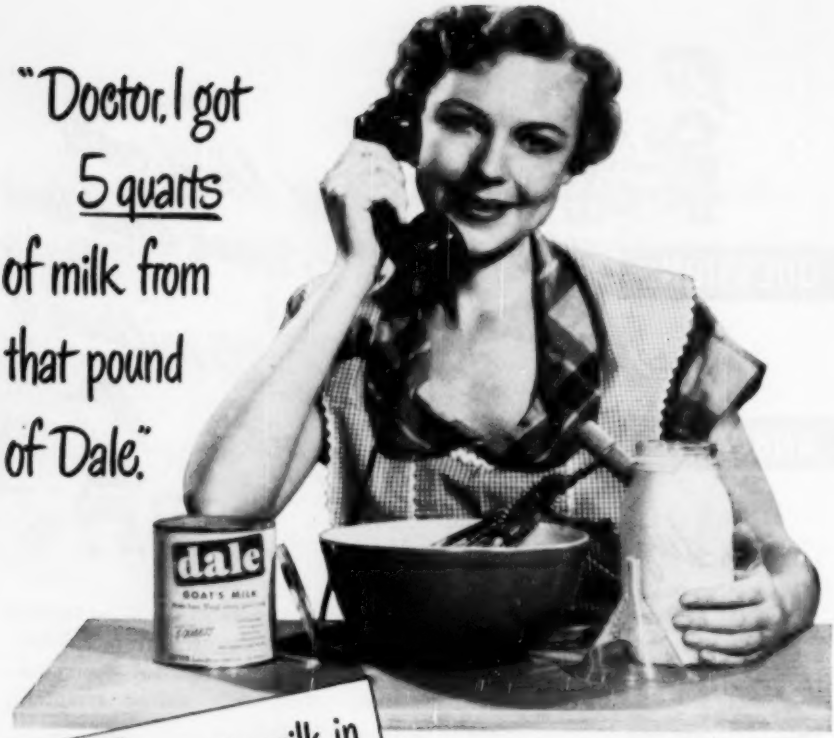

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Dale Dehydrated Goat's Milk is prepared from clean, fresh, whole milk obtained from selected herds maintained under rigid sanitary conditions. It is pasteurized, spray-dried and vacuum packed—providing a reliable year-round source of whole, pasteurized goat's milk. In 8 oz. and 1 lb. cans. Descriptive folder available upon request—write Dept. H-65 Cutter Laboratories, Berkeley, California.

in cases of allergy
for special diets
when mother's milk
is unavailable

Specify **dale** DEHYDRATED **GOAT'S MILK**

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Quarterly Review of PEDIATRICS

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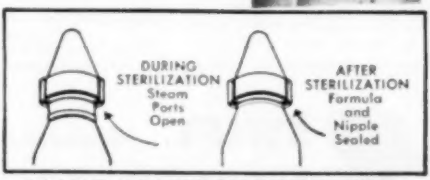

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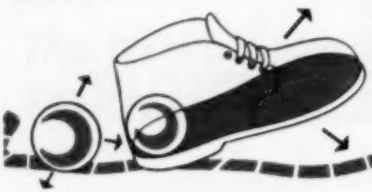

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Quarterly Review
of
PEDIATRICS

Volume 5 Number 3

August 1950

1. Allergy

The Effect of Inherited Antibodies on the Active Immunization of Infants. *Louis Greenberg, Ottawa, Canada and Donald S. Fleming, Montreal, Canada.* J. Pediat. 36: 143–48, Feb. 1950.

Infants under 6 months of age respond well to active immunization with vaccinia virus, pertussis vaccine and tetanus toxoid. The response to diphtheria toxoid is less well known. Many newborn babies inherit diphtheria antitoxin from their mothers which is thought to interfere with active immunization. The purpose of this study was to determine whether this interference was serious enough to discourage immunization in infants under 6 months of age.

Healthy infants were chosen at random from the clinics of the Child Health Association of Montreal. Complete records were obtained on 105 infants, 2 to 6 months of age; 96% were 4 months of age and under. Blood samples were taken from each child prior to inoculation and four weeks after the final inoculation each sample was titrated for diphtheria antitoxin, tetanus antitoxin and pertussis agglutinins. Each child received three 0.5 cc. injections, spaced four weeks apart, of an alum precipitate containing 50 Lf (limit of flocculation units) diphtheria toxoid, 20 Lf tetanus toxoid, and 20,000 million Hemophilus pertussis organisms per ml. By assay on guinea pigs this preparation was found to be 14 times more effective than the Canadian fluid diphtheria toxoid standard, and approximately 100 times more effective than the Canadian tetanus toxoid standard.

An analysis of the results showed that active immunization of infants 3 and 4 months of age against diphtheria, whooping cough and tetanus is practical and sound. The presence of inherited antibody caused some depression of the response to diphtheria toxoid but it was

not great enough to prevent satisfactory immunization of the infants. The average diphtheria antitoxin titer of sera taken after immunization from infants with inherited antibody (they all had less than 0.064 units per ml. prior to immunization) was 0.51 units per ml., whereas the average of the group lacking inherited antibody was 0.92 units.

The response to tetanus toxoid was found very satisfactory. The average titer for this group was 0.71 units of tetanus antitoxin per ml. The results of immunization with pertussis vaccine were less certain since the blood samples were taken before the maximal response was reached. Ninety-six per cent of the children showed a response, as indicated by the development of pertussis agglutinins.

Wide variations exist in the immunizing efficiency of market diphtheria and tetanus toxoids. The importance of a better control of the potency of these products than now exists is emphasized.

2. Anomalies, Genetics

Hereditary Factors in Infantile Progressive Muscular Atrophy. Study of One Hundred and Twelve Cases in Seventy Families. *Sven Brandt, Copenhagen, Denmark.* Am. J. Dis. Child. 78: 226–36, Aug. 1949.

A study is described of hereditary factors in 70 Danish families with 112 cases of progressive infantile muscular atrophy (Werdnig-Hoffman's type), together with a few similar muscular disorders in more distant family members. The patients were collected from hospital records over a period of 40 years and followed up to date or until death. Seventy-three cases had been diagnosed from the start as amyotonia congenita. About 95% seemed of spinal origin, whereas the remaining 5% probably were of myopathic nature.

No sex difference or differences in geographical or seasonal distribution were found. The incidence of miscarriages in the families was one out of 9.3 pregnancies as compared with one out of 9.7 pregnancies in a control group. No parents suffered from muscular disorders. As only 7% of the patients survived the age of 15, no offspring of affected persons was observed or could be expected.

Application of Weinberg's sibling method on the material resulted in a morbidity of 38% among the siblings of the probands. A consanguinity rate of 5.8% was found which was eight times as high as found in a control group. In one family inbreeding was present in two generations, both with affected members. Two pairs of nonidentical twins were included. In both pairs only one child was affected.

In 7 families muscle disorders had been observed in family members other than siblings and parents. One mother, with different husbands, had two affected children. One mother, who later married a brother of her first husband, had affected children in both marriages.

It is concluded that recessive inheritance is the most likely cause. This is in spite of the rather high Weinberg figure, which however can be explained as the result of an excess in affected persons because of selectivity of the material. Dominance with very rare manifestation must however be considered in at least a few families. Interfamilial variability was found in only one family where an abortive case was observed. This indicated that co-acting genes may modify the disease in different families. 17 references. 5 figures. 1 table.—*Author's abstract.*

This form of hereditary muscle disease is seen in population groups other than Danish. Cases occur sporadically all over the United States, occasionally with multiple instances in single families. From a practical viewpoint, the significance of the above observations to the clinicians rests in his ability to tell the parents of an affected child that the trait is almost always recessive. That means that the likelihood of later pregnancies resulting in affected children is only one in four. Such parents should also be informed, however, that two of the other four pregnancies (statistically speaking) will give rise to normal-appearing children who will be heterozygous carriers.—EDITOR.

Heredopathia Atactica Polyneuritiformis in Children. A Preliminary Communication. *S. Refsum, L. Salomonsen and M. Skatvedt, Oslo, Norway.* J. Pediat. 35: 335–43, Sept. 1949.

In 1944, 1945 and 1946, Refsum reported a familial syndrome occurring in 5 patients which he believed had not been described previously. The syndrome—termed heredopathia atactica polyneuritiformis—occurred in 3 sibships in 2 unrelated Norwegian kinships. It is characterized by: atypical retinitis pigmentosa with night-blindness; a chronic polyneuritis-like condition with weakening or loss of the deep reflexes; ataxia and other cerebellar signs; a considerable increase in the protein content of the cerebrospinal fluid without an increase in cell count; an inconstant impairment of hearing of neurogenic type; and electrocardiographic changes.

A similar clinical picture in children is here described. These children were not related to the formerly described kinships. Symptoms began between the ages of 4 and 7 years and showed a slowly progressive development. Most of the patients—adults as well as children—were of average intelligence and showed no mental deterioration. The children had marked ichthyotic-like changes of the skin. Three of the 4 children, including a twin brother and sister, stem from two consanguineous marriages, confirming the assumption that the syndrome is a recessive character.

Four patients (3 adults and 1 child) have come to autopsy. The neurohistologic findings were: (1) fibrous thickening of the lepto-

meninges with lipid macrophages; (2) moderate degeneration of peripheral nerves with changes in the anterior horn cells in the spinal cord; (3) degeneration of the fiber tracts from the ponto-bulbar region to the cerebellar white matter; (4) marchi positive fat in moderate amount in nerve cells and ependyma. No inflammatory lesions were seen. The localization and intensity of these changes varied from case to case. In one adult whose peripheral nerves could be examined, changes were found suggestive of interstitial hypertrophic neuritis.

The pathologic process may be somewhat related to the cerebral lipidoses, but clinically the syndrome is different. 5 references. 5 figures. 1 table.—*Author's abstract.*

Niemann-Pick's Disease: Acute and Chronic Types? *Aage Videback, Queen Louise Hospital for Children, Copenhagen, Denmark.* Acta paediat. 2: 95–116, 1949.

The case of a boy with Niemann-Pick's disease, hospitalized at the age of 26 months, is described. He had been ailing since birth. At the time of hospitalization he showed brownish pigmentation of the elbows and dorsal aspect of the hands and feet, marked enlargement of the spleen and the liver, enlargement of the lymph nodes throughout the body, and muscular dystrophy. At that time the fovea centralis and optic disk were normal. Roentgen-ray examination showed diffuse halisteresis and diffuse pulmonary changes. Puncture and biopsy studies of the tibia, spleen and liver showed the presence of large cells containing lipoid and staining with Sudan III. Under treatment with insulin, liver extract and vitamin K, there seemed to be definite improvement, but when the child was 3½ years of age the spleen was larger than before, and the brown pigmentation had increased; the phosphorus content of the blood was also increased. At this time also, the fovea centralis was red, with a surrounding gray zone. The child died at the age of 5½ of bilateral pneumonia and severe diarrhea. Autopsy was not permitted.

In a review of the literature, a total of 73 cases of Niemann-Pick's disease, including the author's case, was found. Familial occurrence of the disease was noted in 9 cases among siblings. In 3 other cases familial occurrence was probable, a brother or sister having died in early childhood with enlargement of the spleen. In the author's case, there were 2 siblings, both normal. In most cases death occurred before the age of 2 years, but 2 brothers with the disease lived until adult life—29 and 33 years respectively. Children with Niemann-Pick's disease are small, stand and walk late, and show delay in dentition, but the enlargement of the abdomen may be the first sign of actual disease. Autopsy was done in about two-thirds of the reported cases; the Niemann-Pick cells were found in every organ and tissue. Splenec-

tomy was done in 12 cases, but 10 of the children died during or shortly after operation; the other 2 survived two and six months respectively. The stimulant treatment employed by the author seemed to have been of value. 60 references. 1 table.

3. Blood, Hemopoietic System

The Use of Placental Blood in Pediatrics. Preliminary Study (*L'emploi du sang de placenta en pediatrie, Etude preliminaire*). *R. Martin du Pan and Marc Neyroud, Geneva, Switzerland.* Ann. pædiat. 174: 30–35, Jan.–Feb. 1950.

In collecting placental blood, the umbilical cord is cut after sterilizing the placental end, and the placental blood is withdrawn by a 50 cc. syringe which is emptied immediately into a sterile Erlenmeyer flask. The sterility of the blood and the Wassermann reaction are determined. If the blood is sterile and Wassermann-negative, it is filtered and preserved in the ice box, but used within six days.

Because of the low resistance of infants to infection, placental blood, which is rich in gamma globulins, has been used in various types of infection in infants that have not responded to bacteriostatics, or that recur as soon as treatment is stopped. The results in these cases have been good, especially in recurrent rhinopharyngitis and tracheobronchitis, and in intestinal infections. In infants who failed to gain weight normally and in infants with marked anorexia, the injection of placental blood was followed by improved appetite and normal gain in weight. In 21 cases of this type there was only 1 patient who failed to show improvement.

Placental blood has also been used for transfusions in the treatment of hypochromic anemia of infants; such transfusions did not appear to give better results than the usual type of transfusion. 21 references. 1 table. 2 figures.

Hemolytic Disease of the Newborn. I. An Analysis of a Sample of an Obstetric Population. *S. P. Lucia and M. L. Hunt, University of California Hospital, San Francisco, Calif.* J. Lab. & Clin. Med. 35: 24–27, Jan. 1950.

During the years 1943 to 1947, 11,649 blood specimens were obtained from obstetric patients, with 5,175 unduplicated specimens characterizing a population unbiased with respect to the Rh factor.

The frequencies of the ABO blood groups in the Rh-positive and Rh-negative populations varied slightly and insignificantly. There was no relationship between the incidence of Rh-positive and Rh-negative types and the ABO blood groups. The numbers of primigravid and multigravid women were approximately equal. Of the Rh-negative

women, only 4.3% gave birth to infants suffering from erythroblastosis fetalis. Of the Rh-negative women who demonstrated antepartum sensitization, 45.5% bore infants afflicted with hemolytic disease of the newborn. Fifty per cent of the afflicted infants died. 4 references. 5 tables.

Hemolytic Disease of the Newborn. II. An Analysis of Maternal Antepartum Factors in a Sample of Sensitized Rh-Negative Women in Relation to the Clinical Condition of Their Offspring. *S. P. Lucia and M. L. Hunt, University of California Hospital, San Francisco, Calif.* J. Lab. & Clin. Med. 35: 28–34, Jan. 1950.

Data from 61 cases of sensitized Rh-negative women who bore Rh-positive infants were arrayed according to the presence or absence of each of five antenatal maternal factors. The relative order of importance of these factors for the prediction of erythroblastosis fetalis proved to be: (1) higher amounts of maternal Rh antibodies in "albumin" diluent than in "saline"; (2) considerable amounts of Rh antibodies (3 plus or over) in the maternal serum during the last month before delivery; (3) antibodies appearing earlier than ten weeks before the expected date of confinement; (4) the presence of Rh antibodies on all successive testings after the first appearance, and (5) the presence of ABO compatibility between mother and child.

Among 27 women who bore normal Rh-positive infants, 2 showed all of the five factors to be present while 25 lacked one or more. In the 2 cases showing all five factors, one infant was of a different Rh genotype than its siblings. The factor most commonly lacking in the group of sensitized Rh-negative women bearing normal Rh-positive infants was the "higher in albumin" feature. Several normal Rh-positive infants were born to mothers who showed the presence of all five factors. There was no instance of an afflicted child being born to a mother who lacked two or more factors. 4 references. 6 tables.—*Author's abstract.*

A Public Health Rh Program on a State-Wide Scale. *C. I. Avgall.* Am. J. Pub. Health 39: 356–60, March 1949.

A state-wide program is in operation in Utah for Rh testing of pregnant women. The program is supported by the State Division of Laboratories and the Division of Maternal and Child Health. Rh antibody testing is done on request. Rh subtyping tests are also done in special cases. Over 60,000 tests were performed in 1947, and nearly 100,000 in 1948, at a cost of between $10,000 and $11,000. An important observation is that only 8.5% of the Rh-negative women tested were found to be sensitized.

The author points out the advantages of a central laboratory for such testing, which cannot be done adequately in small laboratories.

Mailed samples of blood are satisfactory for such tests. 4 references. 2 tables. 1 figure.—*F. H. Allen, Jr.*

The advantages of a central laboratory for Rh antibody testing, as pointed out by the author, deserve re-emphasis. Small laboratories cannot hope to keep on hand the diversity of rare typing sera necessary for such work to be done well. Interpretation of results is difficult at best, and can be done adequately only by persons who are doing large numbers of tests every day. This has been well brought out in a number of different surveys. Advances in technic as well as in general knowledge of the blood groups are so rapid that only a specialized laboratory can hope to keep up with them.—EDITOR.

The Influence of the Placenta in Hemolytic Disease of the Newborn. *J. H. van Bolhuis, Leiden, The Netherlands.* Maandschr. v. Kindergeneesk. 17: 4, 99–111, 1949.

One hundred and eighty-six placentas were serologically investigated for the presence of Rh antigens. A suspension was made of the thoroughly washed placenta and tested for an inhibiting effect on Rh antibodies. There were 28 placentas from Rh-negative children, 36 from Rh-positive children suffering from hemolytic disease of the newborn, and 122 from healthy Rh-positive children. None of the placentas from the Rh-negative children adsorbed the Rh antibodies. Thirty-one of the 36 from the erythroblastotic children and 16 from the 122 healthy children showed adsorption. It was concluded that Rh antigens are present in a small percentage of the placentas of Rh-positive children and that the antigen from the placenta, when entering the maternal circulation, probably sensitizes the pregnant woman. The fact that a healthy Rh-positive baby may follow other erythroblastotic children when the father is homozygously Rh-positive may be due to this finding that not all Rh-positive children seem to have Rh antigens in their placenta.—*J. I. de Bruyne.*

This is a highly ingenious approach to the mystery of why only a minority of Rh-negative women with Rh-positive husbands develops sensitivity as repeated pregnancies ensue. Corroboration and extension of these experiments might open up a new field for research on preventive measures.—EDITOR.

Mother-Child ABO Incompatibility—A Relation of Secretor Status to Mental Deficiency. *H. Yannet and Rose Lieberman, Southbury, Conn.* Am. J. Dis. Child. 76: 176–83, Aug. 1948.

Studies were made of mother-child ABO incompatibility and AB secretor state in 280 mentally defective children. In a small group with undifferentiated mental defficiency there was a significantly large number of non-secretors who were incompatible with their mothers in

the ABO system. The frequency of the firstborn children was as great as in the population at large. In no case could the clinical diagnosis of erythroblastosis fetalis be made in retrospect from the history. The authors suggest that the data, if valid, indicate not only that ABO incompatibility may be responsible for a small number of cases of undifferentiated mental deficiency, but also that the pathogenesis of cerebral damage by anti-A or anti-B may be different from that involved in Rh incompatibility. 17 references. 4 tables.—*F. H. Allen, Jr.*

Kernicterus is a clearcut clinical entity, occurring usually in babies with erythroblastosis fetalis. Hyperimmune iso-antibodies of various kinds have been found in such cases, including hyperimmune anti-A and anti-B. Whether or not mental deficiency may be attributed to erythroblastosis fetalis in the absence of clinical kernicterus has not yet been shown with certainty. The inference that brain damage caused by A or B antibodies has a different pathogenesis from that caused by Rh antibodies may be unjustified in view of evidence that kernicterus caused by Rh antibodies appears to be unrelated to the severity of the hemolytic process. The authors point out correctly that the clinical problem with respect to ABO incompatibility is a very minor one.—EDITOR.

Rhesus Factor Iso-Immunization and Haemolytic Disease of the Newborn. *Newell Willard Philpott, Esq., McGill University, Montreal, Canada.* J. Obst. & Gynaec. Brit. Emp. 55: 773–85, Dec. 1948.

There is no single hematologic criterion which permits the diagnosis of hemolytic disease of the newborn. Anemia is found in a number of other conditions, as are also large numbers of nucleated red cells, reticulocytes, and other immature forms, as well as macrocytosis. The relative amounts of direct or indirect plasma bilirubin are inconstant. Early and correct diagnosis depends upon careful clinical assessment, serologic studies of the expectant mother and the newborn baby, thorough hematologic study of the blood of the newborn infant, and at times serial repetition of these studies. Prognostically, death or survival is not necessarily indicated by the severity and rapidity of development of anemia or the numbers of nucleated red cells and other young forms present. One infant made a complete recovery whose blood at birth contained 191,200 nucleated red cells per cu. mm., 35% reticulocytes and 60% hemoglobin. Other infants have died with mild anemia, and with no more nucleated red cells and reticulocytes in their blood at birth than may be found in normal premature newborn infants. There seems to be some correlation between the degree of macrocytosis and the extent of the liver damage.

The acute hemolytic process tapers off in three to five days, although the chronic hemolytic stage may be detected for six weeks. After that time the condition becomes gradually less marked. A sud-

den unexplained drop in the hemoglobin may take place during the second week of life, even if the antibodies in the baby's blood scarcely can be detected. As soon as the baby is born, the routine treatment begins with general supportive measures, such as clearing the air passages, maintaining body temperature and continuous administration of oxygen if indicated. When the baby's blood shows a hemoglobin level below 100%, transfusion of whole blood is given within a few minutes of birth. The slow drip method is used most frequently and the blood is given into the temporal vein. There is no syringe pumping. The usual amount given is 10 ml. per pound of the baby's body weight. If there is a marked anemia, as much as 25 ml. per pound may be given. Transfusions are repeated as often as indicated, to maintain the hemoglobin over 100% for the first few days of life. Rh-negative blood is given. A new method of replacement transfusion has been used in 7 cases with good results. Whole blood is infused into the ankle vein, using the cut-down technic. The blood is withdrawn from the umbilical vein by means of a special DuPont Vinylite tip, which is inserted for a distance of 2 inches.

Some hours' delay after birth is advantageous before performing the exchange of blood. It permits the baby's temperature to reach a normal level and aids the infant in becoming adjusted to its new environment. The average total inflow should be approximately 300 ml. against 225 ml. withdrawal. A period of not less than two hours is recommended for the maneuver.

A study of the findings in hemolytic disease of the newborn has indicated that damage to the fetal liver is present in every case. An experiment is currently in progress, in which crystalline methionine is being given to the pregnant mothers as soon as the first signs of immunization are detected. The dosage employed is 5 Gm. daily, which is believed to be greater than the normal maximal daily requirement for a pregnant woman. The expectation is that, if a positive balance be made available to the maternal organism, some would be drawn across the placenta by the fetus. No case of idiosyncrasy or untoward reaction to this essential amino acid has been noted. With some women the treatment has been continued for more than 150 days, a total of approximately 1,000 Gm. The only other medication given these papatients was a ferrous sulfate preparation of iron and a multiple vitamin capsule. A number of comparable women, untreated, served as controls.

To date, there have been 29 infants in the control group and 16 whose mothers received methionine. The results thus far indicate a higher rate of survival among infants born with severe symptoms when the mothers had received methionine. This is believed due to the affected infants having less severe damage of the liver. 26 references. 9 tables.

This is an interim report of what is going to be a long term study. The results will have more general significance when the total number of cases becomes much higher than at present. All one can say at present is that Philpott's figures seem to indicate a significant reduction in stillbirths when methionine is given to Rh-negative sensitized women. This is extremely important if it can be proved in a large series of cases. However, when analyzing the effect of any form of treatment, in a disease as variable as erythroblastosis fetalis, the possible effect of other factors must be taken into account, particularly the sex of the baby, the length of gestation, and the past maternal history of erythroblastotic infants. In the above study, there was no reduction in mortality in liveborn infants, and the inference that kernicterus has been prevented is not justified by the figures. This is an interim report of what is going to be a long-term study.

For completeness' sake it should be added that Philpott and associates gave 0.5 Gm. of methionine daily for at least the first twelve days of life to all newborns with erythroblastosis fetalis (hemolytic disease). This was given in divided doses of 0.125 Gm. each, dissolved in 5% glucose saline mixture or in the milk feeding. (Philpott, N. W., Hendelman, M. and Primrose, T.: Am. J. Obst. & Gyneo. 57: 125–42, Jan. 1949.)

It may be questioned that maintenance of the erythroblastotic infant's hemoglobin at 100% or above is either useful or desirable. A red blood count of 3.5 million, or even 3 million, is considered as an indication for transfusion in some centers and the results are not inferior to those reported elsewhere. For the occasional infant who shows a rapidly progressive anemia, a slow drip of citrated whole blood could be used to advantage, the amount given being determined by the infant's need.—EDITOR.

ABO Incompatibility and Erythroblastosis Fetalis (*ABO Inkompatibilitäten und Morbus haemolyticus neonatorum*). *A. von Grumbach and C. Gasser.* Helvet. paediat. acta 3: 447–74, Dec. 1948.

The authors discuss existing reports of erythroblastosis caused by anti-A or anti-B, and add 9 cases of their own in which erythroblastosis was present on a clinical basis, with no demonstrable incompatibilities in the Rh system. Two of the 9 infants were stillborn. One had the symptoms of kernicterus. Anemia, jaundice, hepatosplenomegaly and erythroblastemia were present. The maternal sera showed high agglutinant and conglutinant titers, which persisted for a long time postpartum. In 8 cases anti-A was involved, in one case anti-B. Some of the infants were secretors, and some were non-secretors.—*F. H. Allen, Jr.*

From the laboratory standpoint, it is important to realize that it is

not the titer of saline agglutinating anti-A or anti-B which is important. High titers of saline agglutinins may be considered important only if after they are neutralized by the addition of specific soluble antigen (Sharp and Dohme), a considerable titer is still present as shown by the conglutination test, as pointed out by Witebsky. There are two further important considerations: this immune anti-A or anti-B antibody is inactive, or relatively inactive, in 20% bovine albumin (human serum or serum-albumin systems are satisfactory), and relatively enormous amounts of specific soluble antigen are required to neutralize the immune antibody. The latter fact should be taken into account when attempting to treat erythroblastotic babies with the specific soluble antigen. It would appear impossible to inject enough A-substance into a baby to alter materially the amount of immune anti-A which might have been passively transferred from the mother.

One further principle is emerging. Erythroblastosis on the basis of ABO incompatibility is just as variable as with Rh incompatibility. Finding of immune anti-A antibodies in a mother does not necessarily mean that her group-A fetus will have erythroblastosis fetalis. The problem of ABO incompatibility is important, though less so than the problem of Rh incompatibility because of its relative infrequency. Current studies are indicating that about 8 to 10% of cases of erythroblastosis fetalis are due to ABO incompatibility.—EDITOR.

4. Cardiovascular System

Drainage of Pulmonary Veins Into Coronary Sinus. *A. Vass and J. Keller Mack, Springfield, Ill.* Am. J. Dis. Child. 78: 906–13, Dec. 1949.

Drainage of the pulmonary veins into the coronary sinus of the heart is reported in a white female child, aged 19 months, with autopsy findings. The heart showed marked hypertrophy of the right side, and a bicuspid tricuspid orifice. The only communication between the pulmonary and systemic circulations was a patent foramen ovale. History of the patient revealed marked cyanosis, clubbing of fingers and repeated attacks of bronchitis. There was superimposed terminal endocarditis and pericarditis. No malformations outside of the heart were present. This is the eighth such case to be reported. The clinical diagnostic criteria are discussed. 7 references. 5 figures.—*Author's abstract.*

5. Chemotherapy, Drugs, Poisons, Physical Agents

Sulfadiazine-Sulfamerazine-Sulfamethazine Mixture. Accepted for Admission to New and Nonofficial Remedies. J. A. M. A. 141: 1233–34, Dec. 24, 1949.

"A sulfonamide mixture containing equal weights of sulfadiazine U.S.P., sulfamerazine U.S.P. and sulfamethazine, to which there may or may not be added a suitable compatible agent to increase the *p*H of the urine. . . . The combination of equal parts of sulfamerazine, sulfadiazine and sulfamethazine has been shown, when given in the suggested dosage, to provide approximately the same therapeutic activity that is obtained when each of the drugs is administered singly in the recommended doses. Comparable total sulfonamide blood levels are thus produced with the recommended doses of the mixture as for each of the drugs given at its suggested dosage. . . . Such a mixture of equal parts thus reduces the incidence of crystalluria to the extent that the amount required of the individual components is diminished. . . .

Triple mixtures of the sulfonamide drugs have been shown to reduce the incidence of renal crystalluria to a greater extent than the dual mixtures of sulfonamides. Further addition or simultaneous administration of a suitable alkalizing agent to the triple mixture tends further to prevent the formation of sulfonamide crystals in the urine.

Dosage. For children an initial dose of 65 to 100 mg. total sulfonamide drugs per kilogram of body weight followed by one-quarter the initial dose every six hours. This dosage should be adjusted to meet the requirements of the particular case."

Sulfamethazine. Accepted for Admission to New and Nonofficial Remedies. J. A. M. A. 141: 1234–35, Dec. 24, 1949.

"Sulfamethazine resembles sulfadiazine and sulfamerazine in certain of its pharmacologic effects. When the drug is administered by the oral route, its rate of absorption from the gastro-intestinal tract (as measured by the concentrations of the drug in blood) was more rapid than that of sulfamerazine. . . . Sulfamethazine passed into the cerebrospinal fluid in concentrations of 40 to 50% of that in the blood. In this respect, it penetrates less easily than does sulfadiazine. Its renal clearance is similar to that of sulfamerazine and about half that of sulfadiazine.

It is excreted readily by the kidneys, in both the free and acetylated forms. The latter constitutes about 70% of sulfamethazine recovered in the urine. If renal function is impaired, the excretion of sulfamethazine will be reduced and the drug will accumulate in the blood and tissues. . . . Sulfamethazine is more soluble in the acid range of urinary *p*H than is either sulfadiazine or sulfamerazine. The same is true for acetyl sulfamethazine.

The toxic manifestations of sulfamethazine are in general similar to those produced by sulfadiazine or sulfamerazine, although it is claimed that this drug is less likely to produce renal damage.

Sulfamethazine is effective in the treatment of hemolytic streptococcic, pneumococcic, meningococcic and staphylococcic infections. It

also has been useful in treating certain urinary tract infections produced by Escherichia coli, Aerobacter aerogenes, Pseudomonas aeruginosa, and Proteus vulgaris.

Dosage. When administered by the oral route to patients suffering from severe infections, the initial dose should be based on 0.10 Gm. per Kg. of body weight up to 50 Kg. of weight. Patients weighing more than 50 Kg. should not receive more than 5 Gm. of sulfamethazine as an initial dose. The maintenance dose of this drug in adults is 1.0 Gm. given at intervals of six hours. In children, one-fourth of the initial dose given at intervals of six hours constitutes an adequate maintenance dose."

Aureomycin Hydrochloride. Report of the Council on Pharmacy and Chemistry of the American Medical Association. J. A. M. A. 141: 533, Oct. 22, 1949.

Aureomycin is produced by fermentation using the organism Streptomyces aureofaciens. In vitro, aureomycin hydrochloride is effective against certain strains of beta hemolytic streptococci, nonhemolytic streptococci, group D, alpha hemolytic streptococci, pneumococci, staphylococci, Escherichia coli, Aerobacter aerogenes, Klebsiella pneumoniae, Bacillus subtilis and Corynebacterium hoffmannii. In embryonated eggs it has an effect against rickettsiae and certain large viruses.

Clinically, aureomycin hydrochloride has been reported to be effective in the treatment of Rocky Mountain spotted fever, typhus, scrub typhus, murine typhus, and Brill's disease in the rickettsial group, Q fever, primary atypical pneumonia, beta hemolytic streptococcic infections, urinary tract infections produced by E. coli, A. aerogenes, staphylococci or streptococci. It should not be used in systemic infections produced by Proteus vulgaris or Pseudomonas aeruginosa. It may also be used in staphylococcic and pneumococcic infections, in acute brucellosis and in subacute bacterial endocarditis which does not respond to penicillin.

Aureomycin hydrochloride, suitably buffered, may be used locally in the eye against a variety of ocular viral infections, such as inclusion conjunctivitis, follicular conjunctivitis and ocular bacterial infections caused by susceptible organisms. The drug produces nausea, vomiting and diarrhea in a fair number of patients.

Dosage. Severe infections require 5 to 10 mg. per Kg. of body weight every four hours orally. Mild infections can be treated with oral doses of 5 mg. per Kg. of body weight every four hours. Solutions for ophthalmic use may be prepared by adding 5 cc. of sterile distilled water to 25 mg. of hydrochloride. One or two drops every two hours in the affected eye will usually suffice to control the condition.

Dermatoses Due to Contact and Treatment with Streptomycin (*Hautschäden durch den Umgang und durch die Behandlung mit Streptomycin*). *K. H. Schafer and E. Oppermann, Göttingen, Germany.* Deutsche med. Wschr. 74: 1491–95, Dec. 9, 1949.

Itching and stubbornly recurring erythema frequently develop in doctors, nurses and patients upon prolonged contact with streptomycin. The face seems predominantly affected, with redness, swelling and desquamation, especially in the vicinity of the eyelids. The entire face may be involved and oozing may ensue. Involvement of the hands and wrists may interfere with work. During the past 15 months the preparations in most common use were Wyeth and Winthrop-Stearn's calcium chloride salt of streptomycin and Pfizer-Merck and Squibb's streptomycin sulfate. During this period 2 of 8 doctors, 9 of 20 nurses, 1 medical assistant, and 13 of 80 children developed such skin eruptions. Most of the children were being treated for tuberculous meningitis or miliary tuberculosis, and were receiving 40 mg. per Kg. by intramuscular injection, supplemented in the meningitis patients by intraspinal doses of 20 to 100 mg. The duration of treatment and free intervals varied individually. Transitory contact with the drug never produced a dermatitis.

Eleven cases are described in detail in which contact with the drug could be demonstrated over a period of several months. The shortest incubation period appeared to be 8 weeks, the longest 10 months. In view of the danger of this complication, all nurses employed in the streptomycin section are now relieved from duty every 4 to 6 weeks. Nurses or doctors sensitized to streptomycin are transferred from this department. All such workers are asked to wear rubber gloves, glasses and cellophane masks while on duty. Frequent relief from this special section and the wearing of protective devices afford the best prophylaxis for streptomycin rash. 9 references. 2 tables.

Acute Phosphorus Poisoning.* *Hyman J. Rubitsky and Ralph M. Myerson, Boston City Hospital, Boston, Mass.* Arch. Int. Med. 83: 164–78, Feb. 1949.

Elementary phosphorus is found in two forms. Yellow phosphorus (to which this paper refers) is an active poison. It forms a dilute colloidal solution in water. Toxic quantities may be absorbed from the skin in water and by inhalation of phosphorus vapors. Red phosphorus is nonvolatile, insoluble, unabsorbable and nontoxic when taken by mouth. Since it may contain traces of yellow phosphorus (up to 0.6%), large doses may have adverse effects. The most common source of phosphorus as a poison is in rat poisons (pastes, powders or seeds) and roach and vermin powders. These contain from 1 to 4% yellow phosphorus. Several decades ago matches and fireworks in this country

used to contain yellow phosphorus, and cases of poisoning from chewing these articles were frequently seen. Phosphorus in poisonous forms is no longer contained in them.

Symptoms of acute phosphorus poisoning are classically divided into three stages. The first stage begins shortly after the ingestion of the poison and usually lasts six to eight hours. The symptoms are those of severe gastro-enteritis—abdominal pain, nausea, vomiting and shock. Diarrhea occurs in about 35% of patients. The breath, vomitus and feces have an unmistakable odor of garlic. This odor is practically pathognomonic of phosphorus poisoning. Luminescence of vomitus and feces may occur also. The second stage, if the patient does not die, is a symptom-free period of apparent improvement usually lasting one to three days but occasionally as long as ten days. The patient generally regains consciousness and appears to be recovering. The third stage is one of systemic toxemia. It is first manifested by nausea and vomiting, diarrhea and abdominal tenderness, especially over the liver. Massive hematemesis may occur. The liver enlarges rapidly and icterus develops. There may be hemorrhages into the skin, mucous membranes and viscera. Leukopenia with monocytosis may be present. Renal damage is demonstrated by oliguria, hematuria and casts. Leucine, tyrosine and cystine crystals may be seen in the urinary sediment. The urine may be phosphorescent. The electrocardiogram shows changes. Central nervous system involvement often results in coma, delirium or convulsions. Recovery from this third stage is unusual. Death may be due to profound irreversible shock, hepatic failure, central nervous system damage or massive hematemesis.

Liver damage is profound and prominent. It shows disappearance of glycogen with subsequent fatty infiltration; abnormal dextrose tolerance curves; incomplete combustion of lactic acid; diminished urea formation with increased excretion of ammonia; increased protein destruction with incomplete de-aminization of certain amino acids; mechanical interference with bile excretion and production of jaundice; decreased fibrinogen which, together with the toxic changes in the capillaries and a possible diminished antithrombin content of the blood, accounts for the hemorrhagic diathesis. The urinary nitrogen may rise by 300%, with all the nitrogenous metabolites being involved, especially ammonia. The nonprotein introgen and amino acid content of the blood are increased. The amino acid level may range from 10 to 30 mg. per 100 cc. as a result of hepatic damage. Amino acids and peptone-like substances appear in the urine. There is increased fat in the liver, heart and other organs; also, at times, there are hypocholesteremia, a diminished proportion of cholesterol esters and lipuria.

Treatment of the patient must be started as soon as the diagnosis is suspected. It is wise for the examiner to wear a covering gown down to the wrists, as glabrous skin may be burned painfully by flecks of

vomitus or feces. External heat should be applied. The stomach is lavaged, using a large pliable rubber suction tube, with copper sulfate 1 Gm. to 1 pint (500 cc.) of water. This acts as both an emetic and an antidote. Two per cent hydrogen peroxide solution or 1:1,000 potassium permanganate solution are also satisfactory. Sodium thiosulfate and sodium iodide may be used if there is suspicion of arsenic or thallium poisoning. A purge, such as magnesium sulfate, should be left in the stomach following the lavage. Fats and oils are to be avoided since these dissolve the poison and promote its absorption. However, because of the solubility of phosphorus in liquid petrolatum, 100 to 200 cc. of this substance should be introduced into the stomach. The acute hepatic insufficiency should be treated with vitamin B complex and vitamin K, with dextrose intravenously, and with a high carbohydrate, high protein, low fat liquid diet, provided the patient is conscious and can swallow. Calcium lactate or gluconate, 1 Gm. three times a day, may be given. Penicillin should be injected in large doses as prophylaxis. The bladder should be catheterized. BAL should be administered when there is a possibility of arsenic poisoning. Isotonic sodium chloride and sodium lactate solutions are given parenterally as indicated to treat the chemical imbalances of shock, acidosis or dehydration. Blood transfusions may be needed. Local phosphorus burns should be treated with 1% copper sulfate solution and bland topical substances.

Of 16 patients with acute phosphorus poisoning treated at the Boston City Hospital in recent years, 7 were children under 6 years of age. Two were poisoned by matches, 4 by rat poisoning and one by cockroach powder. Six recovered and one died. 41 references. 2 tables.

Bromide Intoxication Caused by Dietetic Salt (*Bromide-intoxicatie door dieetzout*). *R. Peeters.* Belg. tijdschr. geneesk. 6: 121–2, Feb. 1, 1950.

American writers have drawn attention to the danger of intoxication by dietetic salts, especially with regard to their lithium or potassium content. The latter may cause sudden death by heart block. The case described occurred in a patient 12 years of age convalescing from scarlatinal nephritis. He had been using a dietetic bromide-containing salt prescribed for his grandmother who had high blood pressure. After a few days he would sleep all day and when awakened he became aggressive and violent, although he was normally a gentle child. After being roused he would fall asleep again within a few minutes. General examination was normal. The urine contained some albumin. The dietetic salt was discontinued but he remained sleepy for two days and his balance was poor. For about three weeks he had crying spells lasting about one hour, beginning and ending without apparent cause. One week later papules appeared on his buttocks. This characteristic bromide eruption subsided after three weeks.

Fatal Poisoning of a Child of Three Years by Cherry Pits (*Tödliche Vergiftung eines dreijährigen Kindes durch Genuss von Marillenkernen*). *W. Lesigang, Vienna.* Oesterreichische Ztschr. f. Kinderhlk. 3: 329–33, Heft 4, 1949.

A child 3 years of age had been eating cherry pits, the exact number not being determined. A few hours later, while walking with his mother, he complained of pains in his hands and feet and had trouble in walking. Returning home, he collapsed after screaming aloud and turning scarlet and then pale. He seemed unable to recognize his mother, suffered severe chills and rolled his eyes, finally lapsing into unconsciousness. The physician arriving two hours later, found the child in a deep coma, with a slow pulse, deep irregular respiration and wide pupils with no reaction. The joints were loose and there were no tendon reflexes. The diagnosis was intestinal poisoning and heart failure. At the hospital he presented cyanosis, frothing at the mouth, slow corneal reflexes and severe spasm of the masticatory muscles, and rigidity of the limbs. His breath had a strong odor of bitter almonds. Lobelin and cardiazol were administered and the stomach was washed out with a dilute potassium permanganate solution. Despite this treatment and artificial respiration, the child died in coma. Autopsy revealed free hydrocyanic acid in the stomach.

When cherry pits are chewed in water hydrocyanic acid is liberated. Baking destroys this poison. Treatment must be very prompt to be effective. 11 references.

Dangers of Excessive Dosage of Vitamin D_2 in Children (*Danger des doses excessives de vitamine D_2 chez enfant*). *Robert Debré and H. E. Brissaud.* Bull. Acad. nat. méd. 133: 596–600, Oct. 18, 1949.

Vitamin D_2 is of definite value in the prevention of rickets and tetany. Its value in tuberculosis and in anorexia, pallor and fatigue in children has never been demonstrated, yet there has recently been a tendency to prescribe this vitamin in large doses in such conditions. If only doses of 8,000 to 20,000 units a day are prescribed, no harm results. Recently there has been a tendency to employ much larger doses in the prevention and treatment of rickets and other conditions.

In a review of the literature, the authors found 36 cases reported by French authors of serious poisoning resulting from excessive doses of vitamin D_2 and 32 cases reported in other countries. Including all cases merely cited and less serious types of poisoning, 254 cases have been found in the literature; most of the cases concerned adults treated with large doses of the vitamin for lupus or chronic rheumatism, but there were 44 cases in children, with 10 deaths in this group, 7 of them occurring in children less than 2 years of age. The authors report 27 cases in children observed by them, with 2 deaths definitely due to

vitamin D_2 intoxication, and a third death in which the cause could not be determined with certainty. The chief symptoms of vitamin D_2 intoxication in children are pallor, loss of weight, and apathy; in some cases convulsions occur (in 5 of the authors' cases). The blood pressure is usually abnormally high for the age of the child, the nonprotein nitrogen of the blood is increased; the urine rarely shows albumin or casts, but an excess of tricalcium phosphate. The most important alteration in the blood chemistry is the excess of calcium; the blood phosphate may or may not be increased. In two-thirds of the authors' patients whose gastric contents were studied there was complete achylia.

Atropine Poisoning from Atropine Eye Drops (*Atropinforgiftning med Oculogutta atropica*). *Bent Möller and Michael Schwartz.* Ugesk. f. laeger 112: 150–51, Feb. 2, 1950.

A boy 2½ years of age was admitted to the hospital for what was believed to be meningitis. He had always been in good health but was taken suddenly ill on his way home from nursery school. He vomited after ingestion of food and then fell asleep. Upon awakening a few hours later he screamed loudly, was seized with spasms and rigidity, and developed an erythema. His movements were choreic and he suffered clonic contractions of the extremities. The skin was red and warm but there were no petechiae. The temperature was 37.6°C. The cerebrospinal fluid was clear and colorless.

He fell asleep. On awakening he recovered completely except for a slight transitory acetonuria. His blood sugar was 150 mg. %. Upon interrogation of the mother, it was learned that he had been receiving atropine eye drops twice weekly in an 0.5% aqueous solution, one drop of which contains 0.25 mg. atropine.

Petroleum, Benzine and Benzol Poisoning in Children (*Beitrag über Vergiftungen mit Petroleum, Benzin und Benzol im Kindesalter*). *Rudolf Scholz.* Klin. Med. 5: 78–85, Feb. 1, 1950.

Nine cases of poisoning in young children 14 months to 5 years of age are described. In 7 the poisoning was due to petroleum, 6 children having taken a drink of the oil and one child having had the oil spilled on him. Two others were poisoned by drinking cleaning fluid. The children who had ingested petroleum showed tachycardia, tachypnea, high fever, motor restlessness, gastrointestinal disturbances and psychic symptoms. They vomited freely and the stools had an odor of petroleum for several days. Two developed bronchopneumonia which subsided in a few days. The children who drank cleaning fluid fell into a stupor, vomited incessantly and showed marked leukocytosis with toxic granulations of the neutrophils. The cleaning fluid was a mixture of benzine and benzol with carbon tetrachloride.

Treatment consisted of immediate evacuation and lavage of the stomach, saline purgatives and cardiotonics. In those patients who were found in coma, coramin or pervitin was administered. All recovered. 19 references.

Lead Poisoning in an Infant from Lead Nipple-Shields; Association with Rickets. *I. Gordon and T. P. Whitehead, Queen Elizabeth Hospital for Children, London, England.* Lancet 2: 647–54, Oct. 8, 1949.

Lead poisoning in nursing infants may be caused by lead in the breast-milk of mothers as a result of its secretion from hair dyes, skin cosmetics, face powder, and ointment; the use of nursing bottles or stoppers containing lead; ingesting of lead by the infant from plasters, dusting powder or nipple shields containing this substance. A high percentage of lead was found in 3 pairs of metallic nipple shields from different sources. It has been demonstrated that finely divided metallic lead can be removed from nipple shields by comparative light finger pressure and that such deposit on the finger is difficult to remove by even vigorous scrubbing with moist gauze. Mother's milk which collects inside the shield may dissolve lead from the shield, especially after being acted upon by acid-producing bacteria. A possibility under investigation is absorption of lead by the mother through the mucosa of the nipple and its excretion in breast-milk.

Symptoms of chronic lead poisoning are usually fretfulness, irritability, sleeplessness, convulsions, vomiting, opisthotonos, and a tense fontanelle. Papilledema, optic atrophy, and optic neuritis may occur. Anorexia is common and may cause weight loss. There may be fever at 101° F. A lead line in the gums is rare. There may be bleeding gums, foul breath, and discolored teeth or tongue. There is usually early pallor followed later by a true anemia. There may be a rapid pulse, mild diarrhea and dark green stools. Blood examination shows a moderate anemia, reticulocytosis, punctate basophilia, normoblasts, Cabot's rings, and a slight leukocytosis. The cerebrospinal fluid pressure and protein are increased and the fluid may be clear or xanthochromic. Lead is found in the urine, hair, nails, and is increased in the blood. Radiograms usually show a dense line or band at the epiphyses of the long bones.

A case is reported in a 6-months-old infant who had never received orange juice or cod-liver oil, had had vomiting and convulsions and was first suspected of having tuberculous meningitis. Roentgenograms showed severe rachitic changes and laboratory examination showed a marked increase of lead in the blood. The anterior fontanelle was tense and bulging. From 20 to 30 ml. of cerebrospinal fluid were removed by each of 5 lumbar punctures. Chloral hydrate 2 gr. was given every four hours and vitamin D 1,400 I. U. daily. The patient was dis-

charged a month later in good condition. Follow-up three months later showed satisfactory progress with greatly improved rickets. It seemed that the lead poisoning in this case might have caused the rickets as the response to vitamin D excluded a vitamin-resistant rickets. 20 references.

It appears warranted to challenge the authors' suggestion that lead poisoning caused rickets in this case.—EDITOR.

6. Clinical Pathology

Direct Microscopical Examination of Faeces in Infants. *Constance A. C. Ross, Glasgow, Scotland.* Brit. M. J. 4651: 465–67, Feb. 25, 1950.

Direct microscopic examination of feces affords a representative picture of the intestinal flora not obtained by selective cultural methods. Fecal smears from a series of healthy infants were examined and compared with the flora of infants suffering from "gastro-enteritis."

Of 52 healthy breast-fed infants, 49 showed the gram-positive Lactobacillus bifidus as the predominant fecal organism. In a further 38 newborn infants on the breast, L. bifidus was predominant in all over 6 days old. In fecal smears from 46 artificially fed infants the proportion of gram-positive and gram-negative organisms was about equal. There was no predominant organism; lactobacilli were scanty or absent. Of 75 infants admitted to hospital with the diagnosis of "gastro-enteritis" those showing a marked shift towards a gram-negative intestinal flora were severely ill.

In view of the fact that "gastro-enteritis" in infancy is of much greater frequency in artificially fed infants than in the breast-fed, it is conceivable that the relative absence of L. bifidus from the stools of artificially fed babies may indicate a deficiency of certain factors in cow's milk which are perhaps essential not only for the growth of these organisms but also for the infant's adequate nutrition and resistance to infection. 6 references, 3 tables.—*Author's abstract.*

We do not yet know the full import of the differences in fecal flora of breast-fed and cow's milk-fed healthy infants.—EDITOR.

Etiologic Factors in Neonatal Tetany. *Lytt I. Gardner, Elsie A. MacLachlan, Walter Pick, Mary L. Terry and Allan M. Butler, Massachusetts General Hospital and Harvard Medical School, Boston, Mass.* Pediatrics 5: 228–40, Feb. 1950.

A review of 16 cases of neonatal tetany revealed that all were fed cow's milk formulas. Analyses of human and cow's milk confirmed previous data that cow's milk has a high concentration of P and a low Ca/P ratio. Breast-fed newborns showed little variation in daily serum inorganic P determinations, but cow's milk-fed infants showed

levels of serum P and Ca similar to values found in neonatal tetany, with maximum P values on the sixth to eighth day of life. The per square meter P intakes of newborns fed cow's milk exceeded that of the average adult, and were within the range known to cause elevated serum P and depressed serum Ca and Mg values in dogs. The association of cow's milk ingestion with neonatal parathyroid hyperplasia is suggested by a correlation of Kaplan's histologic study of newborn parathyroids with diet ingested by infants of his series (cf. Arch. Path. 34: 1042, 1942). Complete metabolic data on a cow's milk-fed newborn showed elevation of serum P, depression of serum Ca and Mg, and marked increase in urinary P as compared to the breast-fed newborn. When Ca lactate was added to the formula serum P, Ca and Mg returned to normal. Balance data showed more positive Ca and less positive P, Mg and N balances than in the pre-Ca lactate periods. When added Ca was withdrawn these balances returned to foreperiod levels, and serum Ca and Mg values again fell. Renal P clearance in face of increased serum P with dietary P load in the first week of life was found to be less than 10% of reported glomerular filtration rate for the newborn. These findings point to the high P content of cow's milk as a major etiologic factor in many cases of neonatal tetany and emphasize the suitability of human milk for the human newborn. 35 references. 6 tables. 4 charts.—*Author's abstract.*

Functional Hypoglycemia in Children. Report of Two Cases. *Bruce F. Grotts and Jesse H. Arnold, Milwaukee Children's Hospital, Milwaukee, Wis.* Arch. Pediat. 66: 462–75, Oct. 1949.

Two cases of this comparatively infrequent disease are reported and compared with some previous cases. Various etiologic theories have been advanced but 70% of cases of spontaneous hypoglycemia in children result from functional hyperinsulinism. The immediate exciting cause is usually a combination of diminished food intake, food loss and excessive expenditure of energy. Frequently associated ketosis and acidosis suggest poor glycogenesis or absence of glycogen reserve as important causes.

The clinical diagnosis is largely based upon a suggestive history. The disease usually occurs in males and should be suspected in children having repeated attacks of nonprogressive hypoglycemia but normal physical findings and normal fasting blood sugars between episodes on standard and low carbohydrate diets. Symptoms include flushing, sweating, headache or dizziness, hunger, nausea, epigastric pain, visual disturbances and palpitation. There may be nystagmus, fixed stare, varying pupillary sizes and reactions, changed reflexes, muscle incoordination or spasm, positive Babinski or Kernig test, and evidences of mental confusion or even mania. Convulsions may occur after exercise or several hours after meals, late at night or in the early morning.

Attacks of organic hyperinsulinism and hepatogenic hypoglycemia are progressive and commonly occur between 2 and 8 a.m. The former variety is not relieved by dietary changes and is generally induced by a missed meal or violent muscular exercise. Glucose tolerance tests are helpful if preceded by a three-day standard preparatory diet as they do not show the extreme height or quick fall of hepatogenic hypoglycemia or the low levels of organic hyperinsulinism. Marked sensitivity and rapid onset of a hypoglycemic reaction are shown by the insulin tolerance test, followed by absent or delayed blood sugar rise after the initial fall. An adrenalin test after the insulin tolerance test only shows about one-half the blood sugar rise seen when the test is given after a twelve-hour fast or a glucose tolerance test.

Oral or parenteral administration of glucose gives immediate relief. Adequate prophylactic treatment consists of a high protein, low carbohydrate diet with avoidance of fasting and excessive expenditure of energy. Frequent high carbohydrate feedings did not control the two reported cases but no further attacks occurred after a diet was given composed of protein 70 Gm., carbohydrate 75 Gm. and fat 80 Gm. Neither epinephrine nor pituitary, thyroid or adrenal extracts seem indicated in children. Infections and fasting periods should be avoided. 32 references. 2 figures.

Serum Vitamin A and Total Plasma Lipid Concentrations as Influenced by the Oral Administration of Vitamin A to Children with the Nephrotic Syndrome. *B. M. Kagan, Elaine M. Thomas, David A. Jordan and Arthur F. Abt, Chicago, Ill.* J. Clin. Investigation 29: 141–45, Feb. 1950.

Josephs, and Kramer and associates, have shown that fasting serum vitamin A levels are abnormally high in children with the nephrotic syndrome.

Six hours after the administration of a test dose of vitamin A, the serum vitamin A levels in 8 children with the nephrotic syndrome were found two to ten times as high as the highest level noted in normal children at the same time interval. The concentrations remained elevated at 24 and at 48 hours. Higher serum vitamin A levels were found in nephrotic patients following vitamin A alcohol in aqueous dispersion than following vitamin A ester in oil.

Higher serum vitamin A concentrations were observed in patients with higher total lipid concentrations, but no quantitative relationship was demonstrated. Various possible causes for these differences were studied. The most likely is that the liver in the nephrotic syndrome fails to utilize or store vitamin A as rapidly as in the normal. 12 references. 2 figures. 1 table.—*Author's abstract.*

Introduction of Clinical Paper Chromatography (*Einführung in die klinische Papierchromatographie*). *F. Hermann, H. Bickel and G. Fanconi, Zürich, Switzerland.* Helvet. paediat. acta. 4: 397–414, Fasc. 5, Nov. 1949.

Paper partition chromatography was suggested by Dent in 1946 as a method for the analysis of biologic fluids and particularly for the demonstration of amino-aciduria. He described a suitable technic and emphasized the diagnostic value of chromatography in nephrotic glycosuric dwarfism. The method has been in clinical use at the University Clinic of Zürich for over a year for the qualitative differentiation and quantitative determination of amino acid mixtures, reducing substances, etc., in the various body fluids. The technic of one-dimensional and two-dimensional paper partition chromatography is described in detail as well as the mode of identification of the amino acid spots. The appearance of these spots depends upon the varying solubility of amino acids in various solvents, such as water, phenol and collidine. With the aid of the ninhydrin test which is specific for the amino acids and polypeptides, the spots appear as red, violet, blue, purple or yellow and the localization of the spots permits identification of the amino acid, while their intensity indicates the concentration present. By preliminary hydrolysis of the test fluid, the polypeptide spots will disappear. Differential diagnosis is also possible by comparison of a chromatogram of natural urine with one of hydrolyzed urine. The sulfur-containing amino acids cystine and methionine must be first transformed into cystinic acid and methiosulfon by treatment with H_2O_2 in order to be clearly demonstrable. Superimposition of spots of various amino acids may also confuse the picture. Chromatography makes it possible to diagnose the presence of amino-aciduria within a period of 16 hours. 21 references. 11 figures.

Chronic Amino-Aciduria, Amino Acid Diabetes or Nephrotic-Glycosuric Dwarfism in Glycogenosis and Cystinosis (*Die chronische Amino-acidurie, Amino Säurediabetes oder nephrotisch-glukosrischer Zwergwuchs bei der Glykogenose und der Cystinkrankheit*). *G. Fanconi and H. Bickel, Zürich, Switzerland.* Helvet. paediat. acta 4: 359–96, Fasc. 5, Nov. 1949.

The syndrome of chronic amino-aciduria in glycogenosis and cystinosis includes amino-aciduria with a normal amino acid blood level, dwarfism, thermolability and polydipsia, and urinary, skeletal and blood changes. Urinary analysis reveals albuminuria, polyuria, glycosuria, phosphaturia, and usually an alkaline urine with greatly increased NH_3 excretion. The blood changes include hypophosphatemia with normal phosphatase values, hypercholesterinemia, low alkali reserve and glycolability. The bony changes may resemble rickets or osteoporosis.

The syndrome may occur in association with general cystine storage or cystine storage in the reticulo-endothelial system. A case is described in which the patient's brother also died of cystinosis. Some writers consider the cystine storage the primary factor, but instances have been reported in which no cystine retention could be demonstrated. One case, probably the first of its kind to be reported, is described in which the syndrome was associated with glycogenosis.

The writers believe a disturbance in amino acid metabolism, probably in de-amination of the amino acids, to be the primary factor. They conclude that chronic amino-aciduria is an hereditary primary metabolic disorder. Acute amino-aciduria may develop as a secondary manifestation in certain severe diseases of the liver with extensive cellular destruction. This "true amino acid diabetes" with a high amino acid blood level is not to be confused with "renal amino acid diabetes" observed in nephrotic glycosuric dwarfism without cystinosis. A rough quantitative and a qualitative determination of the amino-aciduria is made possible by paper partition chromatography. Two cases are reported in detail. Consanguinity of the parents was present in one, although a characteristic feature in previously reported cases. 53 references. 28 figures.

Paper Chromatography and Its Use in the Clinic (*Papierchromatografie en haar toepassing in de Kliniek*). *A. W. Vegter, Rotterdam, The Netherlands.* Maandschr. v. Kindergeneesk. 17: 146–55, 1949.

The circular method of Brinkman was used for paper chromatography. The center of a round filter paper was brought in contact with the fluid to be examined, and after drying, the center was brought in contact with the elution fluid. After about nine hours the elution fluid had spread over the whole paper and the amino acids formed concentric circles after spraying with ninhydrin. Premature babies were found to excrete, during the first days after birth, a considerable number of amino acids in the urine. A few days after birth the urine was normal. 4 references. 8 figures.—*J. I. deBruyne.*

7. Endocrine System

Effects of Pituitary Adrenocorticotropic Hormone (ACTH) Therapy. *J. R. Elkinton, A. D. Hunt, Jr., L. Godfrey, W. W. McCrory, A. G. Rogerson and J. Stokes, Jr., University of Pennsylvania School of Medicine, the Hospital of the University of Pennsylvania, and the Children's Hospital of Philadelphia, Philadelphia, Pa.* J. A. M. A 141: 1273–79, Dec. 31, 1949.

Pituitary adrenocorticotropic hormone (ACTH) was given to 8 patients with the following diseases: juvenile rheumatoid arthritis, 2;

disseminated lupus erythematosus, 2; dermatomyositis, 1; acute rheumatic fever, 2; status asthmaticus, 1. All patients were children or adolescents, except for a 29-year-old woman with the juvenile type of rheumatoid arthritis.

The duration and dosage varied considerably. Treatment was discontinued in 4 patients because of failure to respond or because the supply of the drug was temporarily exhausted. The other 4 patients were treated for as long as 149 days. Many studies were done, including counts of circulating eosinophils and total leukocytes, complete balances of chloride, sodium, potassium and nitrogen, electrolytes in serum, urinary output of corticoids and 17-ketosteroids and in one case of urinary creatinine and uric acid, and tests for glycosuria and for decreased tolerance to dextrose.

Except for the 2 patients with acute rheumatic fever, the signs and symptoms showed an abrupt remission of the disease following the initial course of treatment with the drug. One patient with lupus and one with dermatomyositis, both apparently moribund before therapy, had remission of symptoms which has persisted after cessation of treatment.

One patient with disseminated lupus or generalized collagen disease became refractory to the drug, and died. One patient with acute rheumatoid arthritis had lessening degrees of relief despite increasing doses; the preparation had to be withdrawn because of the appearance of signs of Cushing's syndrome. Other complications were potassium deficiency (1 case) and encephalopathy (1 case). It is evident that the therapeutic use of ACTH must be approached with great caution.

The studies during the initial courses of therapy were interpreted as showing stimulation of the adrenal cortex. There occurred a fall in eosinophils, retention of sodium, retention of potassium in some cases and loss in others, occasional increased negative nitrogen balance, and increased excretion of urinary corticoid or 17-ketosteroids. Slight glycosuria and a small rise in fasting blood sugar occurred in a few instances. 22 references. 7 figures.

Electrolyte Balances in a Male Infant with Adrenocortical Insufficiency and Virilism. The Effect of Desoxycorticosterone Acetate and Salt Therapy with Special Reference to Potassium. *Henry L. Barnett and Helen McNamara, New York, N. Y.* J. Clin. Investition 28: 1498–1506, Nov. 1949.

In a 3-months-old male infant with adrenocortical insufficiency and virilism, observations were made on the effect of administration and withdrawal of desoxycorticosterone acetate and changes in sodium and potassium intake on electrolyte balances, serum electrolyte concentrations, and glomerular filtration rate. The most striking effects were noted on potassium metabolism. Withdrawal of the hormone

and reduction of sodium intake produced a rapid elevation of serum potassium which was associated with increased excretion of potassium and with markedly negative external and intracellular potassium balances. Treatment with desoxycorticosterone acetate reversed these changes. Increased potassium intake raised serum potassium but neither increased potassium balances nor decreased sodium balances.

Changes in treatment produced no significant changes in glomerular filtration rate. There were also no striking effects on tubular reabsorption of potassium although there may have been reabsorption of a smaller proportion of filtered potassium following withdrawal of desoxycorticosterone acetate and reduction of sodium intake.

It is concluded that under the conditions of the observations in this infant the effects of changes in treatment on potassium metabolism were mediated through shifts of potassium between intracellular and extracellular fluids rather than by renal control of excretion. Furthermore, since treatment with desoxycorticosterone and added sodium caused retention rather than loss of potassium, additional dietary potassium was not required. Possible explanations for the discrepancy between these findings and others are discussed.—*Author's abstract.*

The Size of the Adrenals in Children (*Grandeur des surrénales chez les enfants*). *Eivin Hasner, Rigshospitalet, Copenhagen, Denmark.* Acta chir. Scandinav. 99: 51–56, Oct. 31, 1949.

The size of the adrenals was studied in autopsies on 152 children below the age of 15 years; in all cases death was due to an acute condition, since a prolonged illness may affect the size of the adrenals. The weight, length, width and thickness of the adrenals were determined. There were 52 subjects up to 2 years of age; 50 were 3 to 7 years of age, and 50 were 8 to 14 years of age. In all cases the adrenals were microscopically and grossly normal. There was diminution in the size and weight of the adrenals after birth up to 6 months of age; after this the size of the adrenals increased, reaching the birth weight at about 8 years of age. At birth the proportion of cortex to medulla was found to be 3 to 1; in the first six months of life this ratio became 1 to 1, and remained the same up to fifteen years. In 86 of the 151 cases in which both adrenals were obtained, the left was larger than the right, this difference being essentially the same percentage in all age groups. 16 references. 8 tables.

Female Intersex. Report of an Unusual Case. *Louis E. Fazen, Jr., Racine, Wis.* Wisconsin M. J. 48: 1077–78, Dec. 1949.

It has become increasingly clear that the prevailing conception of hermaphroditism is incorrect and should be abandoned. The classification of cases as true hermaphroditism and pseudohermaphroditism, according to the original plan of Klebs, with reference to the nature of

the gonads and external genitalia, is obsolete. Such conditions are variations and degrees of intersexuality.

The management of intersexuality depends primarily on psychologic and emotional factors involved in each case. The anatomic structure of the gonads should be the least determining factor. The therapy which promises the greatest improvement and causes the least disturbance should be followed.

A genetic female is described in whom sex reversal took place at a very early phase of development, with complete replacement of ovarian by testicular elements. The testicles were removed (1) because it is impossible to create functioning male genitalia out of normal appearing female external genitalia, and because this child should make a satisfactory adjustment as a female; (2) to avoid the appearance of male characteristics at puberty; (3) to avoid adverse castration effects if the testicles were removed after puberty; and (4) because there is increased danger of malignant degeneration in cryptorchid testes. 4 references. 2 figures.—*Author's abstract.*

Thyroid Adenomata in Children. Review of the Literature and Report of a Case in a Nine-Year-Old Boy. *Lawrence M. Larson and John H. Rosenow, Minneapolis, Minn.* Minnesota Med. 32: 1005–06, 1032, Oct. 1949.

Geographic factors and the influence of iodine prophylaxis make accurate statistical statements impossible but the reports studied indicate that thyroid adenomata are unusual in pre-adolescent children. Indications for their removal are cosmetic, mechanical, or the possibility of malignant change. This latter is greater than in adults.

The authors present the case of a 9-year-old boy in whom an adenoma of the thyroid 3 × 4 cm. in diameter had been present for nine months, with gradual increase in size but without hyperthyroidism. Surgical removal was effected, taking a wide margin of normal thyroid tissue. Pathologic diagnosis was benign adenoma of the thyroid. Examination one year later indicated the child to be entirely normal. 11 references. *Author's abstract.*

Exophthalmic Goiter in Children: Treatment with Propylthiouracil. *Arnold S. Jackson and Harold B. Haley, Madison, Wis.* Am. J. M. Sc. 218: 493–99, Nov. 1949.

Twenty-six cases of exophthalmic goiter were observed in children ranging in age from 8 to 16 years. Symptoms and treatment are discussed, especially the results of thiouracil and propylthiouracil in 8 patients so treated. The following conclusions seem warranted:

1. Depression of white blood cells must be carefully watched for in the use of thiouracil and propylthiouracil. Four of 8 patients treated with these drugs developed white counts below 5,000, although

there were no serious complications. Propylthiouracil is much safer than thiouracil, which should no longer be used.

2. These drugs have a goitrogenic action as shown by two cases in which, although toxicity was relieved, the continuing large size of the gland made it necessary to perform thyroidectomy.

3. Early diagnosis in some cases may be difficult because of atypical symptomatology or the masking of the clinical picture by previous treatment.

4. Individual response to these antithyroid drugs is uncertain in childhood. There is no rule to determine in which cases they will be successful.

5. At present, the best indication for these drugs is probably in preoperative preparation, or in patients in whom it may be necessary to delay operation.

6. The fact that in only one patient with hyperthyroidism was the disease apparently permanently arrested by propylthiouracil indicates that operation is still the method of choice in the treatment of these patients.

7. Iodine should be given to all patients prior to and following operation. Its use is especially indicated following propylthiouracil to decrease the vascularity of the gland and reduce bleeding at operation.

8. Cervical nerve block anesthesia was successfully used in all patients requiring thyroidectomy, no general anesthesia being necessary.

9. These patients must have an even more careful postoperative regimen than that required for adults. The importance of a high caloric diet, restricted activity, rest, and iodine is stressed. 3 figures. —*Author's abstract.*

8. Eye, Ear, Nose and Throat

Acute Conjunctivitis Caused by Hemophilus. *Dorland J. Davis and Margaret Pittman, Bethesda, Md.* Am. J. Dis. Child. 79: 211–22, Feb. 1950.

A severe form of acute conjunctivitis, characterized by vascular injection, purulent exudate, pain and, often, palpebral edema, was observed in the lower Rio Grande Valley of Texas. Infants and children were attacked more commonly than adults, and there was a high familial incidence. The principal cause of the infection was the Koch-Weeks bacillus, although a number of attacks were caused by Hemophilus influenzae. These two species can now be differentiated. Conjunctivitis caused by H. influenzae only was observed in the vicinity of Washington, D. C. The disease caused by both organisms responded well to streptomycin therapy and also to zinc sulfate therapy, as

judged by subsequent clinical improvement and bacterial cultures negative for the organisms. 7 references. 5 tables.—*Author's abstract.*

Phlyctenular Conjunctivitis in the Child. (*Conjunctivitis Flictenular en el Niño*). *Aurelia E. Alonso.* Buenos Aires, Nov. 30, 1948. (Monograph printed by A. Frascoli, Belgrano 2563, Buenos Aires).

Out of 5,599 ocular cases, the author reports 230 children with phlyctenular conjunctivitis, 189 of whom had tuberculosis. This disease was seen only rarely in children under one year of age. Girls were more frequently affected, and the highest incidence was in the Spring. The conjunctival disease does not seem to occur during the primary stages of tuberculosis, but rather as a manifestation of the re-infection type. Thirty-six patients had more than one recurrence of the conjunctival lesions.

Following the work of Dr. R. Gaete and Prof. de Elizalde, injections of tears from children having both phlyctenular conjunctivitis and a positive tuberculin test made subcutaneously in other children with either negative or positive Mantoux tests resulted in the author's conclusion that tears bear a substance which gives a reaction comparable to 1-10,000 dilution of tuberculin. She feels that phlyctenule is a reaction produced in a hypersensitive individual secondary to "contamination" with tubercle bacillus and an antigenic substance present in tears.

The author reviews the literature extensively and a large bibliography is included. 360 references. 11 figures. 18 roentgenograms.—*G. Ojers.*

Subacute Opto-Chiasmic Arachnoiditis in Malnutrition of Infants (*Arachnoidites opto-chiasmatiques subaiguës dans les dénutritions du nourrisson*). *Jean Levesque, Hospice de la Salpêtrière, Paris, France.* Bull. Acad. nat. méd. 134: 68–71, Jan. 24, 1950.

"Subacute neurotropic pharyngitis" is described as occurring chiefly in the last half of the first year of life. The onset is gradual with pharyngitis, dyspepsia, anorexia, vomiting and diarrhea, resulting in malnutrition. Symptoms of a more severe infection with toxemia develop later. While the child may be ill for several months, no fatalities have occurred in the author's series. In cases of this type examination of the ocular fundus shows optic-chiasmic arachnoiditis. The ocular fundus was abnormal in 11 of 51 cases of epidemic grippe, in 2 cases of chronic encephalopathy, in 3 cases of subacute infections in young infants not definitely identified, and in 20 of 27 cases of neurotoxic pharyngitis. Optic-chiasmic arachnoiditis is regarded as typical; it does not occur early in the disease, but persists until improvement in the child's condition begins. Its disappearance is a favorable prognostic sign.

The eye findings here described are probably a symptom complex. There is no proof that a single viral agent was responsible for the series of cases reported here.—EDITOR.

The Psychologic Implications of Tonsillectomy. *L. L. Coleman, Manhattan Eye, Ear and Throat Hospital, New York, N. Y.* New York State J. Med. 50: 1225–28, 1950.

Tonsillectomy in a child should be planned with "due consideration for the psychologic receptivity of the child." The reason for the operation and the unavoidable but tolerable pain should be honestly presented. An accurate pleasant description of the hospital and the advantages of the anesthesia are helpful. The presence of one or both parents before and after operation is most important. However parental anxiety should not be displayed before the child. The continued stay of one parent throughout the period of hospitalization contributes much to the security of the child. The moment of parental separation prior to surgery can be made more tolerable if the otolaryngologist were to call for the child and personally escort him to the operating room. Finally, the child should be permitted to express overt hostility following the operation for a painful experience, the compensations of which are not apparent.—*A. M. Bongiovanni.*

The practice of the otolaryngologist accompanying the child to the operating room is too much neglected. This advantage, of course, is dependent upon the establishment of favorable rapport between surgeon and child during office examinations. Unfortunately the continued stay of a parent throughout hospitalization, while highly desirable, is not always practicable. Certainly however, it is possible to arrange the parent's presence before and after surgery.—EDITOR.

Electric Burns of the Mouth (*Electrische verbranding van de mond*). *J. C. Tummers.* Maandschr. v. Kindergeneesk. 17: 249–54, No. 8, 1949.

Little has appeared in the literature on the subject of electrical burns of the mouth. In all the cases here discussed, the burn was caused by an alternating current of 125 volts, striking the skin either in a longitudinal or tangential direction. Most of the cases were children who placed the plug in their mouth, with resulting necrosis of the tongue, lips and gums. The affected areas are rapidly covered with a whitish exudate and salivation and fetor persist for days. It is almost impossible for the child to ingest food, and in many cases feeding through the nasal tube becomes imperative. After about 11 days the necrotic tissue is demarcated and severe hemorrhage may develop. Sometimes large sections of the tongue or lip come away, rendering cosmetic restoration most difficult.

Fortunately the oral tissues are so elastic that resulting scars are

not too disfiguring. One patient lost the whole tip of his tongue. After healing it was impossible for him to pronounce the letter "r." Occasionally lesions of the jaw and the teeth may require correction.

The changes produced in the tissues are burns and are not specific for electric injuries. Bacterial infection is secondary. Only one adult is included in the series. The other 9 were all children ranging in age from 13 months to 2½ years. The injury usually resulted from placing a coupling in the mouth. In some cases, attention was drawn to the accident by the infant's crying, in others the lesion was discovered later and the cause was not suspected. In one case the deformity left was so great that the child could not contain the saliva in his mouth, and in several cases speech was affected. In some cases the hemorrhage was so severe as to require ligature. Fever developed in some cases, not in others. 3 figures.

9. Gastro-Intestinal System

Fibrosis of the Pancreas. Enterogastrone and the "Duodenal Mechanism" in Relation to Increased Appetite. *Charles Upton Love and Charles D. May, Minneapolis, Minn., Herbert M. Stauffer, Philadelphia, Pa. and E. D. B. Neuhauser, Boston, Mass.* Am. J. Dis. Child. 79: 91–98, Jan. 1950.

Studies on patients with fibrosis of the pancreas were carried out for two purposes: (1) to discover, if possible, an acceptable physiologic explanation for the ravenous appetite of these patients and its abatement with the administration of dried pancreas, and (2) to determine whether the pancreas is or is not involved in the production of an enterogastrone-like substance which might play a role in the "duodenal mechanism" of Gershon-Cohen.

A barium sulfate suspension, 100 to 200 cc. was given by mouth to selected patients while observed under a fluoroscope. In periods of 15, 30, 45 and 60 minutes after zero time, roentgenograms of the abdomen were taken with the patient supine. Three to five days later the procedure was repeated, a mixture of 30% fat with barium being used. The fat used was corn oil. After three days, a mixture of barium sulfate and fat was again given 30 minutes after 3 Gm. of pancreatin had been swallowed. In two instances powdered pancreatin in U.S.P. was used, and in one case commercially produced enteric-coated pancreatic granules were used. Observations were again made. Barium sulfate alone and barium sulfate plus fat were given in succession to 2 normal children who served as controls and to 8 children with fibrosis of the pancreas. The procedure that included giving pancreatin first was carried out on 3 patients with fibrosis of the pancreas.

In normal subjects, orally administered fat delays gastric emptying. With fibrosis of the pancreas the feeding of fat does not have

this effect. When pancreatin U.S.P. is fed to patients with fibrosis of the pancreas 30 minutes before a meal with fat, delayed gastric emptying results.

The bowel pattern in the children with fibrosis of the pancreas was not unusual either with or without administration of fat. In the normal children the pattern when fat was added was typical of the clumping pattern seen in deficiency diseases. This pattern also appeared in the 2 children with fibrosis of the pancreas after the administration of pancreatin U.S.P. These observations suggest that the humoral agent responsible for the "duodenal mechanism" depends on either a normal pancreas in situ or the products of normal pancreatic digestion.

The significance of the deficiency type of bowel pattern observed in normal subjects and in patients with fibrosis of the pancreas was difficult to evaluate. The explanation that it appears whenever excess fat is present in the bowel does not explain its failure to appear in untreated patients with fibrosis of the pancreas or its appearance in them when they were fed pancreatin. A more logical explanation is that this intestinal picture is due to the hormone which is responsible for the "duodenal mechanism." The patient with steatorrhea no doubt has residual fat in his intestine at all times. When barium sulfate is administered, the intestinal pattern which normally is present only following the feeding of fat is observed. The response is due not to the presence of fat but to the hormonal effect it has engendered. 19 references. 5 figures. 2 tables.—*Author's abstract.*

Cystic Change in the Pancreas: Its Experimental Production. *Peter V. Véghelyi, Tibor Kemény and Joseph Sós, Budapest, Hungary.* Am. J. Dis. Child. 79: 65–68, Jan. 1950.

Carbon tetrachloride in daily doses of 0.07 Gm. per 100 Gm. body weight was subcutaneously injected into albino rats. In the pancreas, eosinophilia and vacuolization and then dilatation of the acini appeared. The islets of Langerhans remained normal. 4 references. 3 figures.—*Author's abstract.*

Fibrosis of the Pancreas in Infants and Children. A Statistical Study of Clinical and Hereditary Features. *C. U. Lowe, C. D. May and S. C. Reed, Minneapolis, Minn.* Am. J. Dis. Child. 78: 349–74, Sept. 1949.

A statistical analysis of the clinical data derived from 134 patients with fibrosis of the pancreas is presented. Included were 43 living patients.

In fibrosis of the pancreas and meconium ileus with fibrosis of the pancreas there was no significance in the fluctuation in frequency of the disease from month to month or from year to year. There was no significant difference in the sexual distribution of the disease. It

was clear that "English" and "Irish" families were attacked with equal frequency by the disease, whereas there was a lower frequency of the disease in Jewish families. There was no observable relation of the birth order to occurrence of the disease, indicating that any environmental factor peculiar to the age of the mother is not of significance in the development of this disease.

It was possible to show by means of the Macklin "percentage affected method," confirming the reports of other workers, that the hereditary background for fibrosis of the pancreas is a single mendelian recessive gene. Two distinct lines of evidence indicate that the gene responsible for the character is not exceedingly rare. While it was not possible to calculate the exact frequency of patients with the disease from the data available, it was possible to show that the true frequency of affected persons in the general population up to about one year of age is somewhere between 1 in 100 and 1 in 10,000. Between 2 and 18 persons out of every 100 in the general population carry the gene for fibrosis of the pancreas in the concealed heterozygous condition.

Breast feeding had no influence on early gain in weight. Those children who tended to survive longest had good gains in weight before appearance of their first symptom and fair gains in weight afterward. Stools of all patients, when adequately described, were grossly abnormal. The commonest early symptom was abnormal stool, but whether the first symptom was gastrointestinal, respiratory or nutritional, it seemed to bear little relation to the eventual outcome of the disease. In the majority of the children, both those who survived and those who died, the first symptom dated from birth. In most patients respiratory symptoms appeared by the fifth month, again in both the surviving patients and those who later died, and the majority of the children required hospitalization before 6 months of age. The commonest physical finding on admission was wasting or a weight below the tenth percentile. Some children showed an impressive preservation of their nutritional state. Râles in the chest were not present uniformly; in an appreciable number of children in whom they were absent the characteristic finding was hyper-resonance. Cyanosis seemed to indicate a poor prognosis, but 8 children survived their cyanosis, 7 of them becoming free of it. Abdominal distention was present in only half the patients. Anemia was uncommon; when present it was usually in infants below 6 months of age. There was surprising similarity in the roentgenograms of the lungs taken at the time of admissions to the hospital of the children who are still living and of those who subsequently died, suggesting that at approximately corresponding stages in the development of their disease both groups required hospitalization. Roentgenograms of the bones showed osteoporosis and were remarkable for the absence of rickets. This abnor-

mality could not be clearly related to the calcium, phosphorus, phosphatase or protein concentrations of the serum. Staphylococcus aureus was almost uniformly present in the nose and throat. 17 references. 27 tables. 3 charts.—*Author's abstract.*

Duodenal Ulcers in Infants. *John H. Fisher, London, Ontario, Canada.* Am. J. Dis. Child. 79: 50–58, Jan. 1950.

Four instances of duodenal ulcer are reported in infants, 8 months, 6 weeks, 4 months, and 3½ months old, ages considerably younger than in most such cases previously reported. All were males. The ulcers were multiple in 3. All had received artificial feeding. None was diagnosed correctly antemortem. All had presented difficulties in feeding, such as failure to gain weight satisfactorily, anemia, vomiting, diarrhea and marasmus. Gross blood was present in the stools of 2. It was not possible to establish a causal relationship to infection or other factors. Pathologically, the ulcers presented the same features characteristic of chronic peptic ulcers of adults. In 2 of the cases, the ulcers had perforated, producing areas of localized peritonitis.

It is suggested that peptic ulcers be kept in mind as a possible cause of feeding problems in infants and young children. 11 references. 5 figures.—*Author's abstract.*

Folic Acid in Celiac Disease. A Study of Its Administration in Twenty-Two Cases. *John Duncan Hay, Royal Liverpool Children's Hospital and University of Liverpool, Liverpool, England.* Arch. Dis. Childhood 23: 220–24, Dec. 1948.

Twenty-two infants and children with celiac disease were treated for a time with a low fat and high protein diet, liver extract, and vitamins. Folic acid was then added to the treatment for a comparable period. The dosage was 10 to 20 mg. daily for one to two months. The clinical condition of the children during these periods was compared by observations on rate of gain in weight and the appearance of the feces. No conclusive evidence was obtained of any beneficial effect from the folic acid. 16 references. 3 tables.

From this abstract it must be presumed that blood and bone marrow studies were not made. The anemia seen in celiac disease is not of the macrocytic type seen in so-called non-tropical sprue which responds to folic acid.—Editor.

10. Genito-Urinary System

Radiologic Diagnosis of Urinary Tract Tumors in Infants and Children. *M. F. Campbell, New York University, New York, N. Y.* Radiology 54: 646–56, 1950.

In the young, Wilms' tumor is the chief renal neoplasm. While excretory urography usually suggests the diagnosis, retrograde pyelography is necessary for greater accuracy. Errors are cited where the latter had been omitted. Age is no limitation to retrograde procedures.

No gastrointestinal preparation other than a low enema was practiced for urography, since laxatives and fasting may actually increase the amount of gas in the bowel. In infants, several ounces of milk prior to urography produce gastric distention, pushing the gas-filled intestines downward and resulting in a clear field. 17 figures.—*A. M. Bongiovanni.*

Renal Tuberculosis in Children (*Tuberculosis renal en el niño*). *Herbert Stacpoole.* Revista urol., México 7: 307–16, Nov.–Dec. 1949.

At the Hospital Infantil, only 1.8% or 12 of 667 urologic cases were renal tuberculosis. Of these 12 cases, 7, or 58%, were in boys. In 2 patients the function of both kidneys had been destroyed with uremia and Koch bacilli in the urine. Urinary symptoms had been present for two weeks to four years, in the majority of patients for one to two months. The mortality rate in this series of 12 cases was 50%: 41% were cured by combined surgical and streptomycin therapy. Clinical data are presented in tabular form.

11. Growth, Puberty, Adolescence

Development of Personality in Dystrophia Adiposogenitalis (*Die Persönlichkeitsentwicklung bei der Dystrophia adiposogenitalis*). *Gion Condrau, Zürich, Switzerland.* Helvet. paed. acta 4: 415–42, Fasc. 5, Nov. 1949.

A study of personality development is presented in 31 cases of dystrophia adiposogenitalis treated at the Children's Hospital of Zürich during the years 1925 to 1934 inclusive, and re-examined in 1947–1948. Obesity was noted at birth in 5 cases, appeared during the first six years of life in 9, during the eighth year in 1, and between nine and thirteen years in 14. In 17 cases treatment had no effect on the obesity, which persisted to adult life. In 4 patients considerable, and in 2 a slight permanent improvement followed clinical treatment. Temporary improvement was achieved in 3. Obesity was permanently cured in only 3 patients. In almost half of the cases the genital hypoplasia disappeared when the patient had grown up. No definite relation could be demonstrated between the cessation of genital hypoplasia and that of obesity.

Most of the patients when re-examined showed peculiarities of personality as regards energy and temperament. As a rule, they were

good-tempered and sluggish, lacking initiative, vitality and independence. They suffered from irritability, depression and other dysphoric moods. Some of the patients exhibited the "hypophyseal temperament," i.e., a carefree state of contentment, apathy and resignation. Mild forms of mental debility were common, especially when the disturbance began in early childhood. Moodishness and sluggishness so common in dystrophia adiposogenitalis constitute part of the picture of the psychopathologic diencephalic syndrome. Nontypical psychic disturbances were also noted. The physical abnormalities seem frequently to give rise to neurotic syndromes difficult to distinguish from those caused by hormone or diencephalic influences. No definite correlation could be demonstrated between the degree and type of psychic disturbance and the degree of physical disturbance. Close relatives of the patients did not suffer from frequent psychoses, but obesity and psychopathic peculiarities of character were not uncommon. 49 references. 11 figures. 2 tables.

Despite the prevailing view in this country that the obesity and growth disturbances in socalled adiposogenital dystrophy are due to emotional causes, the possibility of a basic endocrinopathy has not been fully excluded yet.—EDITOR.

12. History, Biography, Antiquities

See Contents for Related Articles

13. Infectious Diseases, Acute

Human Disease Associated with the Coxsackie Viruses. *Edward C. Curnen, Yale University School of Medicine, New Haven, Conn.* Bull. New York Acad. Med. 26: 335–42, May 1950.

The Coxsackie viruses are recently discovered filtrable agents of small particle size, characterized by their capacity to cause fatal paralysis and destructive lesions of striated muscle in infant mice and hamsters. Like poliomyelitis viruses they are widely distributed in nature. They have been recovered from human pharyngeal swabbings and feces as well as from sewage and flies. They exist in multiple immunological types but differ immunologically from poliomyelitis viruses and do not cause the distinctive signs or lesions of poliomyelitis when injected into monkeys.

On the basis of epidemiologic, clinical and laboratory evidence, the viruses of the Coxsackie group appear to be associated with and capable of causing human disease. They have been recovered from patients during outbreaks of illnesses diagnosed as poliomyelitis or "summer grippe" and from each of six laboratory workers who contracted infection with these agents while studying them. In some of the patients

the development of neutralizing antibodies against the homologous type of virus was also demonstrated.

Illnesses attributable to Coxsackie viruses have resembled not only paralytic and nonparalytic poliomyelitis but also epidemic pleurodynia or mild undifferentiated fevers. An analysis of the clinical features in 14 patients who were studied revealed that all had fever and malaise and all but 2 complained of headache. Abdominal pain occurred in 9 and nausea in 8. Vomiting, stiffness of the neck or back, and pain in the extremities were each noted in 6. Five patients complained of weakness, sore throat, or pain in the neck or back. The peak elevations of temperature ranged from 100.3° F. to 104.5° F. Fever lasted from 2 to 10 days with an average of 5.3 days. Other signs of illness were infrequent and transitory. Six patients had hyperemia of the pharynx or stiffness of the neck; 3 had abdominal tenderness and 2 had weakness of an extremity. All recovered. A lumbar puncture was done on 9 patients. Pleocytosis of the cerebrospinal fluid was present in 7. The leukocytes numbered from 0 to 375, and, in all but one instance, included polymorphonuclears which constituted 7 to 54% of the total.

It is apparent that the clinical features of human disease attributable to Coxsackie viruses are not distinctive and vary considerably. The importance of Coxsackie viruses as a cause of human disease, the relative frequency with which different clinical patterns of infection occur, and the extent to which these agents will be identified with syndromes of previously unknown or uncertain etiology remain to be determined. 21 references. 3 tables.—*Author's abstract.*

Studies of Endemic Diphtheria in Palermo (*Ricerche sull'endemica difterica a Palermo*). *G. Cascio, Istituto D'Igiene e Microbiologia dell'Universita di Palerma.* Sicilia Med. 6: 597–606, Dec. 1949.

The morbidity rate of diphtheria in Sicily has fallen from a frequency of 2.17 per 10,000 in 1937 to 0.48 in 1945. An investigation of the population in relation to diphtheria immunity was conducted. One thousand children of Palermo, aged 3 to 12 years, were Schick-tested. All were healthy and had not been immunized against diphtheria. Only 24.7% of the entire group was positive. The proportion of immune children exceeded that in Rome, Bologna, Turin and Padua. In a group of 1,000 children under 13 years and 100 adults, when cultures for diphtheria organisms were made, 7.9% were found to carry C. diphtheriae. Of these 74.8% were of the mitis variety and 93.8% were nonpathogenic in the entire group.

The large immune population suggests that diphtheria is relatively common in Palermo, but in view of a negligible clinical morbidity and mortality, it probably occurs in subclinical form. 8 tables. 24 references. —*A. M. Bongiovanni.*

These data indicate the prevalence of subclinical diphtheria in an

unimmunized population with the resultant rise in acquired immunity with increasing age. Such a situation may lead to a false sense of complacency and in no way detracts from the advisability of routine diphtheria immunization in pediatrics, and at intervals even among Schick-positive adults.—EDITOR.

The Recurrence of Influenza A Prime in a Boarding School After 2 Years. *M. Michael Sigel, Albert W. Kitts, A. B. Light and Werner Henle, Children's Hospital of Philadelphia and the University of Pennsylvania, School of Medicine, Philadelphia, Pa.* J. Immunol. 64: 33–38, Jan. 1950.

The cyclic recurrence of epidemics of influenza A every two or three years is believed to be mainly the result of rapid loss of immunity following infection. Another factor of probably lesser importance lies in differences among strains of influenza A.

An outbreak of influenza A is described in a boys' school which two years previously had experienced an outbreak due to an antigenically similar virus. Two years after infection, resistance to the influenza A was no longer demonstrable. 15 references. 1 figure. 2 tables.

Aureomycin in the Treatment of Influenzal Meningitis. *Miles E. Drake, J. Edmund Bradley, Jerome Imburg, Fred R. McCrumb, Jr. and Theodore E. Woodward, University of Maryland School of Medicine, Baltimore, Md.* J. A. M. A. 142: 463–65, Feb. 18, 1950.

One group of 3 children and another group of 4 children are described who were ill with H. influenzae meningitis and who were treated successfully with aureomycin. The treatment in all but one of these patients was begun within twenty-four hours of the apparent onset of illness.

Lumbar puncture revealed grossly cloudy fluid in all cases; spinal fluid leukocyte counts ranged from 1,028 to 15,000 and sugar content ranged from 4 to 30 mg. per 100 ml. Gram-negative bacilli were seen on all direct smears, and cultures on Fildes' agar were uniformly positive for H. influenzae, type B, within twelve hours.

The first 5 patients were given aureomycin both intravenously and orally. In the remaining 2 the oral route was used exclusively. The average total dose was 11.4 Gm., given over an average of 12 to 13 days. One patient was treated successfully with 2.7 Gm.

In all but one patient this regimen was followed by fall of temperature to normal levels within 96 hours after the initial dose. Improvement in the sensorium was uniformly observable, but not striking, in the first 36 hours of treatment. By the third day of treatment abatement of such symptoms as mental dullness and convulsions was definite. On the fifth day the acute symptoms had disappeared and the patients were plainly convalescent. In one more refractory patient, a Negro

infant 9 months of age, 600 mg. of aureomycin were given per day, and the cultures remained positive for seven days. Response was rapid when the dosage was increased. 6 references. 2 figures.

Acute Lymphocytic Choriomeningitis. A Study of Twenty-One Cases. *William Roy Green, Shreveport, La., Lewis K. Sweet, Washington, D. C. and Robert W. Prichard, Boston, Mass.* J. Pediat. 35: 688–701, Dec. 1949.

This is a clinical discussion of the specific meningeal involvement caused by the virus of lymphocytic choriomeningitis. It is based on a study of 21 patients in whom the diagnosis was proved by isolation of the virus from the spinal fluid or by demonstrating a significant rise in virus neutralizing antibody.

The clinical and laboratory findings are discussed in detail. The onset was insidious, usually with grippe-like symptoms, in about half the patients. The other half became ill suddenly with meningeal symptoms, without antecedent illness. The most common symptoms were malaise, anorexia and headache, which were present in all patients, and nausea and vomiting, stiff neck, and clouding of the sensorium (even to the extent of coma) which were present in the majority of patients. All patients showed clinical evidence of meningeal irritation. Fever, which was usually present, varied from 101 to 105° F., with a mean of 102° F., and lasted on the average 4.4 days.

The most characteristic laboratory finding was a pronounced pleocytosis in the spinal fluid with counts ranging from 142 to 3370 per cu. mm. The differential count always showed 90% lymphocytes or more. There was an elevation of spinal fluid protein in all patients. This occasionally was extreme, up to 400 mg. %, and persisted well beyond the time of the pleocytosis. One unexpected finding was that the cerebrospinal fluid dextrose was markedly depressed at the time of one or more observations in 7 patients. The blood counts showed normal total and differential cell counts except in the presence of complicating pyogenic infections.

The disease occurred in patients ranging in age from 6 to 39 years. There was no sex difference in children, but there were 12 adult females and 5 adult males. The illness occurred more frequently in spring and fall, rarely in the summer.

The diagnosis and differential diagnosis are discussed in detail. It is emphasized that a precise diagnosis can be made only on the basis of virologic study. Treatment is entirely symptomatic and supportive, though it is recommended that these patients remain in bed until the spinal fluid is clear to avoid the possibility of late sequelae. 22 references. 2 tables. 2 charts.—*Author's abstract.*

Purpuric Manifestations Occurring in Measles in Childhood. *Stephen D. Millis, Mayo Clinic, Rochester, Minn.* J. Pediat. 36: 35–38, Jan. 1950.

Purpura as a complication of measles is not of common occurrence. Ten instances were found in a review of the pediatric case records of the Mayo Clinic for a period of thirty years, and one case is reported. Fifteen additional cases were reported in the literature to this date.

Purpura may afford evidence of an underlying blood dyscrasia. Of 11 reported patients in whom purpuric manifestations followed measles, 4 were found to have thrombocytopenic purpura and 2, leukemia. The remaining 5 patients showed little or no increase in the size of the liver, spleen or lymph nodes. Only one of these had a definite thrombocytopenia with prolongation of the bleeding time. There were 2 deaths in the 11 cases reported.

The outlook for the ultimate recovery of patients who exhibit purpuric manifestations following measles is good. It is necessary to be certain that such purpura is not an evidence of a blood dyscrasia or the accompaniment of a severe infection. 9 references.—*Author's abstract.*

Measles Encephalitis. Study of Fifty Cases. *Steven Sawchuk, Alfred C. LaBoccetta, Anthony Tornay, Alexander Silverstein, Augustin R. Peale, Philadelphia Hospital for Contagious Diseases, Philadelphia, Pa.* Am. J. Dis. Child. 78: 844–67, Dec. 1949.

A series of 50 cases of measles encephalitis was reviewed. Sixteen died in the acute stage (32%) and 34 survived. Forty-two per cent were boys and 58% were girls. Of the 16 who died, 4 were boys and 12 were girls. The occurrence of convulsions indicated a graver prognosis. In 84% the encephalitis appeared from the third to the eighth day after the onset of measles. Forty-eight per cent of the patients were between 5 and 8 years of age, inclusive. The mortality was higher in the group with less than 50 cells in the spinal fluid cell count. Dehydration therapy apparently did not influence the mortality rate.

Nineteen of the 34 survivors were examined later. None had abnormal movements of the extremities. Five had had convulsions since discharged from the hospital in the form of petit mal, jacksonian, or generalized convulsions. Two had cerebellar dysfunction, 2 had lower motor neurone involvement, 6 upper motor neurone damage, and 1 had disease of the extrapyramidal tracts. Facial palsy was present in 4. Abnormality of gait was seen in 6. Five of 14 patients were classified as feeble-minded. Several had an I. Q. over 100 but with some personality disorder. Detailed findings in some of the cases are presented along with 9 case reports. 10 references. 12 figures.—*Author's abstract.*

Meningeal Reactions in the Course of Measles (*Les réactions meningées en cours de la rougeole*). *Y. Boquien, D. Hervouët and Duhamel, Nantes, France.* Presse méd. 58: 242–44, March 11, 1950.

A study of the cerebrospinal fluid was made in 75 children with measles by one or more lumbar punctures. An increase in cell count was found in 65%, usually on the sixth to the eighth day after the beginning of the eruption. The cell count varied from 2 to 112 cells per cu. mm., chiefly lymphocytes. There was no change in the chemistry of the cerebrospinal fluid. The majority of patients had no clinical signs of meningeal involvement. In only 2 cases was microscopic or macroscopic blood found in the cerebrospinal fluid, but in neither of these was there any sign or symptom of meningeal involvement. Only 6 of the 75 patients showed clinical symptoms of central nervous system involvement; 4 had typical measles meningo-encephalitis, and 2 meningitis. These are reported in detail. All but one child made a complete recovery; this one had a parkinsonian syndrome after discharge from the hospital. 4 references. 1 table.

A Case of Postvaccinal Myelitis and New Researches on Postvaccinal Encephalitis. *P. H. Kramer, Rotterdam, The Netherlands.* Nederl. tijdschr. v. geneesk. 92: 3172–80, Oct. 9, 1948.

Two weeks after his first vaccination against smallpox an 18-year-old boy developed myelitis, resulting in complete paralysis of the lower extremities with complete surface anesthesia, anal incontinence, retention of urine, fever and evidences of meningitis. The cerebrospinal fluid was under somewhat increased pressure with a cell count of 190/3 per cu. mm. The temperature soon decreased, and the neurologic features subsided slowly. When discharged from the hospital the patient still had partial paralysis of the legs and some sensory impairment. This patient shows, as also appears from the literature, that the neurologic complication after vaccination is a meningo-myelo-encephalitis; the encephalitic and meningitic forms occur more frequently. Verlinde of Leiden succeeded in producing encephalitis in dogs by injecting guanidine simultaneously with vaccination, or sometimes even without it. Guanidine is a product of the destruction of animal cell nuclei, and is normally detoxified in the liver. When the liver is damaged or when guanidine is parenterally administered, this detoxification does not take place and the consequence is that the central nervous system may become more sensitive to neurotropic viruses. 10 references.—*M. G. Stronk.*

Gelatinous Edema. A Pathognomonic Sign in Mumps. *George Heller, Englewood, N. J.* Am. J. Dis. Child. 78: 903–05, Dec. 1949.

In the majority of cases of mumps, especially those affecting the

submaxillary and sublingual salivary glands, the tissue overlying the area of adenitis is moderately edematous. This edema can be differentiated from the swelling accompanying pyogenic infection by a simple test: if the margin of the edematous area is gently tweaked, the area quivers like jelly.

When this gelatinous type of swelling is present, peripheral to enlargement of the salivary glands, mumps may be considered to be the cause of adenitis. In the series presented, gelatinous edema was present in over half the cases involving the parotid gland, and in every case of submaxillary mumps adenitis. 1 reference. 2 tables.

This is a common and striking feature of mumps which is known to every experienced clinician but which is seldom included in textbook descriptions of the disease. Occasionally edema of this same nature is seen curiously localized over the upper sternum.—EDITOR.

Chloromycetin in the Treatment of Pneumonia in Infants and Children. A Preliminary Report on Thirty-Three Cases. *Adrian Recinos, Jr., Sidney Ross, Bennett Olshaker and Ellsworth Twible, Children's Hospital, Washington, D. C.* New England J. Med. 241: 733–37, Nov. 10, 1949.

Chloromycetin was used in the treatment of 33 children 4 months to 12 years of age having bacterial pneumonia as diagnosed clinically and by laboratory tests. The cases were grouped as pneumococcal 18, streptococcal 1, staphylococcal 1, and unclassified 13. Chloromycetin was given orally in daily doses of from 50 to 250 mg. per Kg. of body weight. Most doses were given every three hours. The total treatment period varied from two to six days. The drug was given in a capsule to older children. The best procedure for small children was to mix the drug with syrup of Santa Yerba and follow this with chocolate milk.

Estimations of the therapeutic value of treatment were chiefly based upon the rapidity of return to normal of the clinical, roentgenologic and laboratory findings. Serial nasopharyngeal cultures were made of each patient, beginning on admission and continuing at the rate of 2 to 4 cultures every two days. Leukocyte counts returned to normal by the third day in 21 of the patients but the leukopenia was neither progressive nor associated with granulocytopenia. The temperature became normal within three days in 32 cases. Serial chest roentgenograms showed the inflammatory process to be appreciably resolved in four to seven days in 24 cases.

Comparison of results obtained with oral chloromycetin in 18 patients with pneumococcal pneumonia and 11 similar patients treated with aureomycin orally showed that the former received about 25 mg. per Kg. larger dose but this difference was rather empirical as the optimal doses have not yet been standardized. Rapid defervescence

occurred with both drugs. The temperature of aureomycin-treated patients returned to normal in an average of twenty-two and two-tenths hours and that of the chloromycetin-treated in twenty-three hours. Nasopharyngeal cultures of 61% of aureomycin-treated patients and 70% of chloromycetin-treated patients were negative after five days. Roentgen resolution averaged five and nine-tenths days for aureomycin-treated patients and five and three-tenths days for chloromycetin-treated patients. No treatment failures occurred with either drug. Nausea, vomiting and diarrhea occurred not infrequently with aureomycin and sometimes made it necessary to stop the drug. A transitory leukopenia was the only evidence of toxicity from chloromycetin and did not necessitate stopping treatment in any case.

Results obtained in this small series indicated that chloromycetin is effective treatment for bacterial pneumonia. 4 references. 3 tables. 3 figures.

Recommended Practices for the Control of Poliomyelitis. *Formulated by the National Conference on Recommended Practices for the Control of Poliomyelitis, held in Ann Arbor, Michigan, June 1949.* Copies available upon request from The National Foundation for Infantile Paralysis, Inc., 120 Broadway, New York 5, N. Y.

This material was prepared to answer the needs frequently expressed for an up-to-date guide for the many practical problems related to the control of poliomyelitis. The matters of most interest to pediatricians are reproduced.

THE DISEASE

Etiologic Agent. The poliomyelitis virus. Several immunologically distinct types have been identified.

Source of Infection. Pharyngeal and fecal discharges of infected persons, frequently those not suffering from a clinically recognized attack of the disease.

Mode of Transmission. Close association with infected persons accounts for the great majority of cases. Outbreaks attributable to milk have been rare and limited. Although flies have been found to be contaminated with the virus, there has been no reliable evidence of spread by insects, water, food or sewage.

Incubation Period. Usually 7 to 14 days. (May be from 3 to 35 days.)

Period of Communicability. Apparently the period of greatest communicability is covered by the latter part of the incubation period and the first week of acute illness.

Susceptibility and Immunity. Susceptibility to infection is general. Immunity is acquired by infection which may have been clin-

ically inapparent. The duration of immunity is unknown, but second attacks are rare.

Prevalence. Infection is prevalent throughout the world. Paralytic cases have been apparently more frequent in the temperate zones. The highest incidence is in summer and early fall. In the United States an annual incidence of 10 paralytic cases per 100,000 population is ordinary. There is a wide variation in incidence from year to year and region to region. Children from 1 to 16 years of age are more frequently attacked than adults. In several countries, including the United States, older children and young adults constitute a higher proportion of reported cases than formerly. Even during epidemics the incidence of paralytic cases has rarely exceeded one per thousand population.

Methods of Control.

A. Preventive Measures: None.

B. The Infected Individual, Contacts and Environment:

1. Reporting: In reporting, paralytic or non-paralytic should be specified. A clear separation between these two groups permits a closer comparison of incidence between localities and with past experience.

2. Isolation: For one week from date of onset, or duration of fever if longer.

3. Concurrent disinfection: Nose and throat discharges and feces should be disposed of as quickly and safely as possible. Articles soiled should be promptly disinfected.

4. Terminal disinfection: None.

5. Quarantine: Quarantine of unproven value. Modified quarantine restricting the movement of intimate contacts for 7 to 14 days may be desirable in certain circumstances.

6. Active immunization: None. Passive immunization is not recommended.

7. Investigation of source of infection: Search for an expert diagnosis of sick children to locate unrecognized and unreported cases of the disease.

Epidemic Measures.

1. General notices to physicians and the public at large.

2. Isolation in bed of all children with fever, pending diagnosis.

3. Education in such technic of bedside nursing as will prevent distribution of infectious discharges to others from patients isolated at home.

4. Protection of children so far as practicable against unnecessary contact with persons other than their usual associates.

5. Postponement of elective nose or throat operations or dental extractions.

6. Avoidance of excessive physical strain (e.g., violent exercise) in children during an epidemic or in case of known exposure.

7. Avoidance of unnecessary travel and visiting, especially of children, during high prevalence of the infection.

THE PATIENT

Reporting. All obvious and suspect cases should be reported promptly. As soon as possible all of these cases should be classified as paralytic or non-paralytic. Cases which are finally diagnosed as presumptive (abortive) poliomyelitis should not be included in the final tabulation of cases by the health officers.

Diagnostic criteria of paralytic or non-paralytic poliomyelitis should generally include three or more of the following: (1) history compatible with poliomyelitis; (2) fever; (3) stiff neck and/or stiff back; (4) 10 to 500 cells per cc. of spinal fluid taken during the acute or early convalescent period of the disease; (5) spinal fluid protein elevated above normal limits; (6) demonstrable muscle weakness or paralysis.

Cases which present only (1) history compatible with poliomyelitis, and (2) fever, should be classified as presumptive (abortive) poliomyelitis.

Paralytic cases are defined as those in which definite weakness or paralysis has been detected and persisted during at least two examinations with an interval of at least several hours. Results of an examination for paralysis of muscles of the extremities or trunk may be very unreliable during the period of muscle tenderness or "spasm."

Hospitalization.

Admission to General Hospital. Patients with acute poliomyelitis, or presumed to have acute poliomyelitis, are admissable to a general hospital provided that appropriate isolation precautions are employed. No special isolation or "pest" facilities are necessary.

Nursing Care. During isolation, or hospitalization after the period of isolation, there is no need for a special duty nurse for each patient. Special duty nurses should be employed with regard only to the medical condition of the patient, and to the number of patients they can properly handle.

Isolation Technic in Hospitals. The isolation procedures used for the care of acute poliomyelitis patients are similar to technics used in the hospital care of other communicable diseases, namely: (1) segregation of patients having the same disease, preferably in single rooms or small wards. Patients can be cared for in large wards; (2) washing of linen in the hospital laundry. Ordinary precautions for handling articles from infected persons are sufficient; (3) sterilization of eating utensils after use; (4) availability of toilets or hoppers in each room, small ward or large ward; (5) availability of hand-washing facilities in each room, small ward or large ward; (6) use of gowns by physicians when examining a patient and by nurses when caring for

a patient, particularly while bedpanning; (7) disposal of excreta of patients by placing in toilet or hopper as soon after passage as possible. The bed pan should be washed out if the utensil is used for a single patient, but when used in wards bed pans should be sterilized each time the utensil is used. No special treatment of feces from polio patients is necessary; (8) hand washing with ordinary soap and water should be practiced following examination of patients and after bedpanning a patient.

When toilet or hopper is situated outside the room or ward, a single pan should be covered, carried out and contents disposed of as above (7); multiple pans are best cared for by placing on a cart and transferred to the disposal unit and taken care of as above (7).

Care at Home. Patients may be cared for at home if home facilities and medically supervised care are adequate; or may be discharged to home when there is no medical indication for further observation or treatment in the hospital. Admission to or care in a hospital for isolation purposes only is not usually indicated.

Care of Suspected Cases. Suspected cases when admitted to a hospital should be segregated when possible from known cases until the diagnosis has been established or the patient is discharged as well.

Transportation of Patients. Patients may be sent from their own home communities to another community. A common carrier should not be used. Transfer should be carried out with the knowledge and the consent of the health officers in the jurisdiction to and from which the patient is being transferred. No special treatment of ambulances is necessary after their use by poliomyelitis patients.

THE COMMUNITY

Whatever is done to upset the usual routine of children in a household or adults in their occupations is likely to bring more trouble than good.

Schools.

Recommendation: Public and private schools should not be closed during an outbreak of poliomyelitis, nor their opening delayed, except as noted below:

Reason: The closing of schools, or the delay of their opening, has not affected the course of outbreaks of poliomyelitis; moreover, such action has often resulted in panic on the part of the public. The decision to open school as usual should be announced well in advance jointly by the Superintendent of Schools and the Health Officer, in collaboration with the local medical society.

Early in the season the State Departments of Education and Public Health should issue a joint statement to which local authorities can refer for support. This statement should be issued in collaboration with the State Medical Society.

Exceptions:

1. Schools to which children are transported in busses from widely separated areas may be delayed in opening, if such action will prevent other close contacts among children. If these schools are not opened such action is justifiable only when other close contact among these children is not permitted in such places as theaters, picnics, playgrounds, swimming beaches or Sunday schools.

2. Boarding schools (excluding colleges and universities) should delay opening sessions if poliomyelitis exists in the area where the school is located and if the children are thus prevented from coming into the area from regions where the disease is not prevalent.

3. Nursery schools may be continued or closed depending upon the particular circumstances. Parents who have facilities at home to limit contacts of young children with other children should be encouraged to keep pre-schoolers at home.

CAMPS.

Summer camps should be opened as usual if there is no outbreak of poliomyelitis in the area in which the camp is located. Children should not be admitted from areas where an outbreak exists.

Inasmuch as there is no evidence that retention of children in camps where poliomyelitis exists leads to increased hazard, whereas dismissal from camps may lead to spread to other communities, it is further recommended that if a case of poliomyelitis occurs in a camp the following procedure be instituted: (1) retention of all children and staff at the camp for 14 days after last contact with the case or until the usual closing date of camp; (2) modified and supervised activity to prevent excessive exercise and undue mixing in group activities; (3) careful medical checkup on all children daily; (4) isolation of all children with fever or any suspicious signs and symptoms; (5) discontinuance of admission of new children to camps in which poliomyelitis cases have been recently diagnosed. Day camps should follow the same recommendations as those above pertaining to schools.

PLACES OF RECREATION AND AMUSEMENT.

It is recommended that health officers do not take action to close or prevent the operation of places of recreation or amusement, such as fairs, circuses, theaters, swimming pools or beaches, provided these are properly operated. Attendance of children at such places should be discouraged. Any theoretical advantage that might be gained by closing such facilities is offset by the undesirable results of disruption of community life.

The Use of Positive Pressure as an Aid in the Handling of Respiratory Paralysis from Anterior Poliomyelitis. *Richard L. Masland, Robert B. Lawson and Weston M. Kelsey, Winston-Salem, N. C.* J. Pediat. 36: 31–34, Jan. 1950.

A small positive pressure respirator has proved of great value in the handling of patients suffering from respiratory paralysis. Such a device facilitates the moving of patients from one tank-type respirator to another and the opening of the respirator for purposes of x-ray examination, intravenous fluids, and general nursing care. Far more important is the use of this device in preventing pulmonary edema. A patient in the tank-type respirator suffers from negative pressure within the thorax whenever temporary or even partial obstruction of the airway develops. In a seriously ill patient, this is an almost unavoidable occurrence unless tracheotomy is performed. Pulmonary edema is a frequent result and probably accounts for much of the respiratory embarrassment of patients in the tank-type respirator. Pulmonary edema can be combatted with: (1) liberal use of oxygen; (2) repeated (every 2 hours) changes in body position from back to face lying; (3) intermittent use of positive pressure breathing, approximately 15 minutes every one to two hours.

When using intermittent positive pressure with 100% oxygen, the oximeter cannot be relied on as an index of pulmonary ventilation, since almost no pulmonary exchange is required to maintain blood oxygenation under these conditions. A high CO_2 level of dangerous degree has been observed in several patients under these conditions, and the oximeter has given a false sense of security.

This preliminary clinical study suggests that investigation of the use of positive pressure should be continued. 6 references. 1 figure. —*Authors' abstract.*

Acute Poliomyelitis. Relation of Physical Activity at the Time of Onset to the Course of the Disease. *Dorothy M. Horstmann, Yale University School of Medicine, New Haven, Conn.* J. A. M. A. 142: 236–41, Jan. 28, 1950.

In order to throw light on the question of whether heavy physical exertion during the prodromal period of poliomyelitis tends to a more severe and extensive paralytic attack, detailed examinations were made of the clinical histories of 411 patients with various types of poliomyelitis. The cases in the study were mostly from the two largest epidemics of 1948—in North Carolina and Los Angeles. Each patient or his parents was interviewed to obtain a detailed record of physical activities during the few days prior and after the onset of symptoms. The degree of paralytic involvement was measured 2 to 3 months after the onset.

In about 20% of the cases the disease had followed a biphasic course. There has been a short initial period of mild symptoms and minor illness, followed by a few-day interval with no symptoms and then the onset of more severe signs of major illness. The physical activity before

or after the first phase or minor illness had no bearing on the degree of paralysis later sustained by these cases.

Physical activity occurring on the day of onset and the subsequent two days of major illness, however, meant a significant difference between the paralytic and non-paralytic groups. For example, 35% of the non-paralytic group gave a history of bed rest and minimum activity on the day of onset. In contrast, only 9% of the paralytic group had had bed rest or minimum activity, whereas 74% had carried on full activity. A similar difference was also found when activity on the day of onset after the actual appearance of symptoms was compared. A significantly higher percentage of patients who later developed paralysis had indulged in unusual or excessive physical exertion during the first 3 days after the first appearance of the signs of the disease.

The critical period at which physical activity plays a decisive role is the first 24 to 48 hours after the onset of symptoms in the non-biphasic type, and after the onset of the second phase in the biphasic type—the period in which symptoms are often mild and easily overlooked.

Just how physical activity influences the degree of paralysis is not known. In certain cases irritability and restlessness due to the infection itself may drive the patient into physical activity. 10 references. 2 figures. 7 tables.

Resistance against poliomyelitis is now thought of as consisting of two principal elements. There is a natural nonspecific resistance which is unrelated to exposure to the virus. There is also an acquired immunity which develops as the consequence of repeated exposure to the virus, perhaps associated with one or more actual subclinical attacks of the disease. The relative importance of these two mechanisms is not known. Additional factors contributing to susceptibility are fatigue, as demonstrated by the above report, exposure to cold, and perhaps other physical and physiologic disturbances which in some cases seem to have opened the door for entry or activation of the virus.

It is highly probable that during the immediate preparalytic period in poliomyelitis, virus has already reached and infected the brain stem and spinal cord but has not yet passed the critical level which Bodian has shown to be necessary before paralysis occurs. The effect of overexertion on motor neurons already infected can readily be understood as increasing the intensity of cell damage beyond the critical level. Russell's observations that the muscle groups most heavily used during the preparalytic period are the ones most likely to be paralyzed afford strong evidence for this concept.

The evidence here recorded emphasizes the observations of others that the degree of activity during the acute phase of poliomyelitis in-

fluences the resultant paralysis. Bed rest is imperative whenever the onset of the disease is suspected.—EDITOR.

Antecedent Illness in the Berlin Poliomyelitis Epidemic of 1947 (*Die Vorkrankheit bei der Berliner Poliomyelitisepidemie 1947*). *Gerhart Joppich and Fritz Kuske, Berlin, Germany.* Monatschr. f. Kinderhlk. 97: 343–49, Heft 8, 1949.

In the 2,246 cases of poliomyelitis in the Berlin epidemic of 1947, a previous illness was recorded in 1,170 cases or 52%. In 652 cases this disease was catarrh of the nasopharynx or bronchi, in 218 intestinal disturbances, in 169 asymptomatic febrile affections, in 22 specific infectious disease, in 21 traumatic or other injury and in 82 cases a combination of diseases.

The site of the preceding illness seemed to bear no relation to the location of the later paralysis, nor did season and age. Specific well-defined infectious diseases and trauma probably play some part in the release of poliomyelitis, but these were so rarely connected with poliomyelitis in the Berlin epidemic as to be regarded as purely coincidental.

In the great majority of cases the preceding illness seemed to be specific, i.e., caused by the virus itself. The preceding illness does not develop at the time of invasion of the virus but during the period of incubation. The possibility of an allergic origin of poliomyelitis is discussed. A case of poliomyelitis following tonsillectomy is described in detail. 27 references. 1 table. 7 charts.

The possibility has been suggested by various authors that bacterial infection, like mechanical trauma, may facilitate the entry of poliomyelitis virus but it has never been proved. The present authors' observation that "preceding" illnesses often occurred during the incubation period of poliomyelitis suggests that they may actually have been instances of Phase 1 ("minor illness") of the diphasic ("dromedary") course that is not uncommon, especially in children.—EDITOR.

Rubella-Deafened Infants. Comparison of a Group of Rubella-Deafened Children with a Group of Hereditarily Deaf Children and Their Sibs. *Louise A. Hopkins, M.S., Northampton, Mass.,* with a Mathematic Appendix by *Lydia Greene Kinzer, M.A., Columbus, Ohio.* Am. J. Dis. Child. 78: 182–200, Aug. 1949.

A questionnaire was sent to a group of mothers who had had rubella during the first, second or third month of a pregnancy which had produced a deaf child. There were 92 replies. As controls there were 62 cases in which only one child was born deaf but the mother had not had rubella during pregnancy. Both this group and the rubella group were then compared with their hearing sibs. The rubella group had 72 hearing sibs; the hereditarily deaf group had 59 hearing sibs.

The average birth weights were as follows: rubella in first month of pregnancy, 4.9 lb., second month, 5.5 lb., third month, 6.2 lb.; sibs of rubella children, 7.5 lb.; hereditarily deaf children, 6.9 lb., their sibs, 7.5 lb. Using the criterion "prematurity includes not only those infants born prior to the fortieth week of gestation—but also those who have a birth weight less than 2,500 (5½ lb.)" it was found: rubella in second month, 44.4%; rubella in third month, 21.2%; sibs of rubella children, 1.4%; hereditarily deaf, 6.5%; their sibs, 3.5%.

Of the rubella children, 53 were profoundly deaf and 38 were partially deaf. Of the hereditary deaf children, 41 were profoundly deaf and 21 were partially deaf. There were 53 of the 92 in the rubella group in whom the only reported defect was deafness. The other defects were: 3 bilateral cataracts, 7 unilateral cataracts, 1 retinitis pigmentosa, 30 congenital heart disease, 4 mental defects, 2 spastic paralysis, 2 congenitally dislocated hips, 1 umbilical hernia, 1 obstruction in the penis, 1 hypospadias and 1 pilonidal dimple. Thirteen children had multiple defects besides deafness. 18 tables. 5 references.

Sequelae of Mumps-Meningoencephalitis. *Vera Oldfelt, Linköping,* Sweden. Acta med. Scandinav. 134: 405–14, Nov. 7, 1949.

In 75 cases with mumps meningo-encaphalitis which were preceded, accompanied or followed by typical salivary gland involvement, treated at Stockholm Epidemic Hospital during epidemics of mumps in 1942–1943, 15 have been found to be suffering from lasting ill-effects at follow-up examinations three to five years after the onset of the disease. In addition there are 5 dubious cases. In only a few cases are the sequelae of a relatively severe nature: one child with total unilateral deafness, another child with severe epilepsy, and one man with vestibular dizziness. The sequelae in other cases are milder, although a constant source of irritation for the persons in question. Thus, diverse mild forms of eye and ear symptoms have been demonstrated, as well as some mental symptoms of a neurasthenic nature both with and without headaches, and one (or two) cases of endogenous obesity, possibly due to injury to the hypothalamus. In a few cases changes have been noted on the electroencephalograms.

The risks of permanent ill-effects after mumps meningo-encephalitis appear to be greater in those cases in which distinct symptoms of encephalitis have been present at the acute stage. On the other hand, judging by this investigation, there is no connection between the spinal fluid findings at the acute stage and later symptoms. 14 references. 7 tables.—*Author's abstract.*

Studies on Poliomyelitis in Ontario. *Nelles Silverthorne, M. Patricia Armstrong, F. H. Wilson, W. L. Donohue, Alice M. Goodfellow, T. E. Roy, L. McClelland, Eina M. Clark and A. J. Rhodes.* Aided in field studies by *J. W. Leach, R. V. McGee, C. I. Scott, F. T. White, R. N. Kyles, E. G. Johnson, W. J. McLean and W. Berwick, University of Toronto, Toronto, Canada.* Canad. M. A. J. 61: 241–50, Sept. 1949.

Observations are being made on the behavior of poliomyelitis in the farming area of Dufferin County, Ontario with a population of 14,000. During the first year of the study in the summer and fall of 1948, 28 probable cases were investigated. Four of these patients were paralyzed, 2 had the non-paralytic form, and 16 had the minor illness type of poliomyelitis, not even being confined to bed. There were 4 examples of biphasic illnesses. In 3 of these the second period took the form of a minor illness. Using the method of monkey inoculation of stool extracts, poliomyelitis virus was isolated from 7 out of 16 cases whose stools were collected within 3 weeks of the onset of symptoms; one pool of 4 additional stools also proved positive for poliomyelitis virus. Two of the isolations were from cases of minor illness. Three children attended school in the infectious period immediately before the onset of symptoms. Of the total 112 contacts exposed to these cases, probably only 1 developed clinical poliomyelitis.

Epidemiologic findings suggest that the disease was spread chiefly by close contact between children. Most patients gave a history of playing with another patient with prolonged contact. The infectious period extended from 8 days before the onset of symptoms to 11 days thereafter. It was concluded that the child suffering from a minor illness plays a most important role in the spread of poliomyelitis. The incidence of clinical poliomyelitis in the families of 25 primary cases was investigated. None of the 52 adults became sick, and only 3 of the 55 children. The attack rate was 2.8% among family members. 12 references. 4 tables.

The present study confirms a number of others published during the past few years to the effect that poliomyelitis is spread by direct contact, that the period of contagiousness is shortly before and after the onset of clinical manifestations, and that the minor form is of great epidemiologic importance. It is interesting to note here, as in other studies, that communicability does not extend to the later period of the disease when virus is still demonstrable in the stools, suggesting that it depends upon oral rather than fecal sources. The familial incidence in the present study was lower than in some others.—EDITOR.

Present Status of Immunization to and Treatment of Scarlet Fever. *Paul S. Rhoads, Northwestern University Medical School, Chicago, Ill.* Am. J. Dis. Child. 77: 244–52, Feb. 1949.

Immunization against scarlet fever remains a controversial subject despite much evidence of its value. Active immunization by the Dick method is a reliable and worthwhile procedure. Protection against the disease is insured by the recent modification of the original method. Unchanged scarlet fever streptococcus toxin U.S.P. is administered in an initial dose of 650 skin test doses and is increased to a final dose of 120,000. Severe reactions may be diminished or eliminated by using 7 to 10 doses in the immunizing series instead of the usual 5. Many substitute methods for the Dick procedure have been used in an attempt to reduce the number of injections and lessen the severity of the reactions. Their efficacy has not yet been demonstrated. Some workers consider that the scarlatinal rash is only one manifestation of a nonspecific streptococcal infection. However, the specificity of this streptococcus can be demonstrated by its ability to produce a soluble toxin in vitro. Many reports indicate that the incidence of ordinary hemolytic streptococcal sore throat has been reduced in immunized groups. The late serious complications of streptococcal infection such as nephritis are five times more frequent in scarlet fever than in streptococcal sore throat without rash. Active immunization reduces bacterial invasiveness which depends in part on the presence of streptococcal toxin.

The optimal treatment of scarlet fever is a combination of penicillin and human convalescent serum. Commercial antitoxin may be substituted for human serum and is more readily available; however, it occasionally may lead to serum sickness. Penicillin will terminate the carrier state; sulfonamides will not. 29 references.

As implied by the author, scarlet fever may be conveniently considered as being two diseases in one—an acute infection by a highly invasive organism with a tendency toward septic complications, and an acute toxemia due to products of the infecting streptococcus. Whether the rash of scarlet fever is determined by the individual's response to this toxin, or whether it depends on specific strains of hemolytic streptococci, is not entirely clear, but the former is probably nearer the truth. During every epidemic of scarlet fever, many streptococcal infections are seen without an associated rash.

In untreated scarlet fever, the toxic features of the disease are usually over in a few days, but they may be extremely severe or even fatal, and may result in severe complications. For example, severe toxic myocarditis is sometimes seen, and the late electrocardiographic changes are perhaps of toxic origin. The toxic features of the disease are not affected by chemotherapy, but respond well as a rule to specific antisera, whether of human or animal origin. The bacterial invasive features are well controlled by penicillin. Thus the patient with severe toxemia, as shown by high fever and a brilliant rash, does best with

both serum and chemotherapy. The incidence of septic complications is reduced little if at all by serum therapy alone.

Theoretically, immunization with streptococcal toxin by the Dick method should and probably does confer some benefit by inducing some antitoxic immunity. Whether it affects the bacterial invasive phase of the disease is more doubtful and more difficult to prove.

Active immunization is used very little, especially by pediatricians, and for good reasons. The immunity is of rather short duration, and the incidence of severe reactions can be high. Furthermore, there is always the danger of doing serious damage to the child with subclinical nephritis, rheumatic fever, or perhaps other conditions associated with infection by beta hemolytic streptococci. Nevertheless for highly exposed groups, such as the staffs of hospitals for contagious diseases, Dick toxin immunization seems to be logical and worthwhile.—EDITOR.

The Speed of the Secondary Immune Response to Tetanus Toxoid with a Review of the War Reports and Observations on the Simultaneous Injection of Toxoid and Antitoxin. *John J. Miller, Jr., Mary Louise Ryan and R. R. Beard, San Francisco, Calif.* Pediatrics 3: 64–74, Jan. 1949.

A review of 30 reported cases of tetanus occurring in actively immunized personnel of the British and American armies presents the following conclusions. The only type of tetanus that need be feared in recently immunized individuals is that which may follow extensive trauma or massive contamination. It is characterized by short incubation periods, sometimes even less than one week, and a high case fatality rate. The reinjection of toxoid on wounding in 2 such instances failed to prevent death. The speed of the antitoxin response during the week subsequent to a reinjection of tetanus toxoid was observed in a group of more than 150 actively immunized children. Marked individual differences were observed. Factors which influenced the speed of response were: (1) the type of toxoid employed in the basic immunization, alum-precipitated or aluminum hydroxide adsorbed toxoid inducing a superior capacity to react promptly when compared to fluid toxoid; (2) the type of toxoid used for the reinjection (for the secondary stimulus), fluid toxoid inducing a more rapid rise in antitoxin that alum-precipitated toxoid; (3) the interval elapsing since the last previous injection of toxoid. When this interval was greater than 4 years the speed of response was occasionally slowed.

Experimental evidence is advanced indicating that the simultaneous injection of prophylactic antitoxin and tetanus toxoid in different extremities does not prevent the secondary immune response to the toxoid. It is therefore suggested that the maximal prophylactic effect against tetanus in severely wounded immunized individuals (and/or when immunization occurred more than 4 years previously) may be

obtained by simultaneous injection of toxoid and antitoxin in different extremities. 13 references. 5 figures. 2 tables.—*Author's abstract.*

Control of Whooping-Cough in Nurseries. *G. E. Breen, B. Benjamin and A. Beck, London, England.* Lancet 258: 198–200, Feb. 4, 1950.

Trials of a vaccine against pertussis were carried out in 7 nurseries under the control of the London County Council. These nurseries provide 528 places for children aged 0 to 2 years. These are not closed communities for there is a constant trickle of new admissions and discharges. During 1944–1948 inclusive, 201 cases of whooping cough occurred among them.

The children were divided into groups according to age and alternate children were given glaxco pertussis vaccine combined with alum precipitate diphtheria toxoid. The controls were given diphtheria toxoid alone. Reactions to the injections were negligible.

Of 181 children receiving pertussis vaccine, none developed pertussis during an average subsequent stay of 197 days. Ten cases developed among the 156 controls remaining an average of 184 days. 19 references. 7 tables.—*Author's abstract.*

Aureomycin Treatment of Pertussis. *Chang Shih-Man, Edward Buist Wells, Edwin H. Place and Maxwell Finland, Boston, Mass.* J. Pediat. 36: 443–50, April 1950.

Aureomycin was used orally in the treatment of 22 patients hospitalized for pertussis. The dosages were those usually recommended. All but 5 of the patients were under 4 years of age. Improvement began soon after aureomycin treatment was started and continued steadily in 17 of the patients. Nasopharyngeal cultures became negative soon after aureomycin was started and H. pertussis could no longer be obtained from cultures of any of the patients who were treated 10 days. Bacteriologic and clinical relapses occurred in 3 of 10 patients who received aureomycin for only 5 days. Toxic effects from aureomycin were limited to mild vomiting and loose bowel movements in a few patients but this did not necessitate discontinuing treatment. 25 references. 3 figures. 2 tables.—*Author's abstract.*

Pertussis is so variable that it is not always safe to draw generalizations from small numbers of cases. The results with aureomycin here reported are certainly not sensational.—EDITOR.

14. Infectious Diseases, Chronic

The Effect of Cortisone and ACTH on Rheumatic Fever. *Currier McEwen, Joseph J. Bunim, Janet S. Baldwin, Ann G. Kuttner, S. Baer Appel and Alfred J. Kaltman, New York University College of Medicine and Bellevue Hospital, New York, N. Y.* Bull. N. Y. Acad. Med. 26: 212–28, April 1950.

Experience is described with cortisone or ACTH administered to 3 children with rheumatic fever and rheumatic heart disease. One received ACTH alone; the 2 others received cortisone first, followed later by ACTH. The therapeutic responses and metabolic effects seemed essentially the same with both drugs. The observations on these rheumatic fever patients have been aided by the study of 11 additional patients with rheumatoid arthritis or scleroderma who received cortisone or ACTH or both.

Within the first week of therapy the fever, polyarthritis and toxic symptoms subsided. A sense of well-being ensued, often accompanied by euphoria. The appetite increased and weight gain began. One child who had pleurisy with effusion showed complete clearing in 4 days. The erythrocyte sedimentation rate began to improve after 4 or 5 days, and reached normal in 10 days to 3 weeks. The leukocyte count response was variable, sometimes subsiding to normal, sometimes rising. In 2 of the 3 patients the anemia disappeared after a few weeks of therapy. A slight increase in gamma globulin and fall in serum globulin was noted. The serum gamma globulin, which was increased in 2 patients before therapy, became normal during treatment. The "C" reactive protein also fell to normal when the patients improved, as did the antistreptolysin-O titer in 2 of the patients. Various serum biochemical levels exhibited the usual changes observed in normal individuals and in patients with other diseases receiving cortisone or ACTH.

The effects on the carditis itself were difficult to evaluate. Two patients with active carditis of 2½ and 9 months' duration showed no immediate improvement in heart failure. One patient treated on the sixth day of rheumatic fever showed striking improvement of carditis and apparently was completely well following 44 days of treatment. 12 references. 3 tables. 3 figures.

Prevalence of Rheumatic Heart Disease at High Altitudes. *Bernice G. Wedum, Washington, D. C., Ward Darley, Paul H. Rhodos and Ella Jane Swan, Denver, Colo.* Am. J. Dis. Child. 79: 205–10, Feb. 1950.

For 20 years, Colorado has been among the first five states in deaths from rheumatic heart disease among school children. The altitude in this state ranges from 3,350 to 14,431 feet with an approximate mean of 6,800 feet. It seemed possible that the high rate among children in Colorado might be related to the high altitudes. Of 1,017 children, 5 to 23 years old, living at 10,000 feet or above, 10 were found to have rheumatic heart disease. 6 references. 2 tables.

Effects of Cortisone and ACTH in Rheumatoid Arthritis. *R. H. Freyberg, Cornell University Medical College and the Hospital for Special Surgery, New York, N. Y.* Bull. N. Y. Acad. Med. 26: 206–11, April 1950.

Both cortisone and ACTH can benefit rheumatoid arthritis of both adults and children (Still's disease) quickly and markedly. Improvement begins with great reduction of stiffness, a wider range of joint motion, even of the inflamed joints, and a reduced or complete loss of pain at the joints and in the non-articular connective tissue. Progressive decrease in the joint inflammation then occurs, and finally articular tenderness subsides. These changes take from a few days in the early disease to several weeks in older and more severe arthritis. In early cases complete remission usually occurs; in cases of longer standing, some swelling and effusion may persist. Destructive changes of cartilage, bones and ligaments remain unchanged. Subcutaneous nodules, bursitis, and tenosynovitis improve or vanish concurrent with improvement in the arthritis. There is concomitant improvement in appetite, food consumption, weight, strength and general sense of well-being. Laboratory abnormalities change toward normal. A small amount of arthritis may appear for a few days during cortisone administration. On cessation of treatment relapse usually occurs.

Cortisone acts directly upon the tissues themselves. ACTH acts through adrenal stimulation and more than one adrenal cortical function may be stimulated. The dose of cortisone can be regulated at will, whereas the effectiveness of ACTH depends upon the adrenal's capacity to respond. Patients have been seen in whom the adrenal responses seemed to diminish as ACTH continued to be given.

The manner of action of these hormones is not known. The large doses required suggest that the connective tissue needs to be flooded with the adrenal hormone—a sort of mass action effect. The speed of response strongly suggests that the benefit is obtained through altered enzyme-system function, a change in antigen-antibody relationships or in tissue permeability. The basic cause of the arthritis remains unaltered by cortisone, as shown by the relapse which follows cessation of the hormone. Precisely the same joints again become inflamed, and nodules and effusions reappear similar to the pre-hormone conditions.

Complications include undesired metabolic or "toxic" hormone effects. Potassium depletion, edema from sodium retention, partial hypercortico-adrenalism (facies of Cushing's syndrome, acneiform eruption, hypertrichosis without hypertension and usually without glycosuria), hypomenorrhea or temporary amenorrhea with symptoms of menopause, irregular menstruation, occasional increases in basal metabolism, diabetic carbohydrate metabolism, tachycardia, excitability, insomnia, and mental depression have been observed.

In the author's experience with 17 patients receiving cortisone and 16 receiving ACTH, no serious complications have been encountered, although some received hormone for four or five months. Edema subsided promptly or could be prevented by restricted sodium intake and administration of ammonium chloride or a mercurial diuretic. All undesired effects were completely reversible. There were greater tendencies for endocrine complications in females in the premenopausal age.

The dosage of cortisone for adults with rheumatoid arthritis is approximately 100 mg. daily, in single daily injections. After remission has been achieved, 100 mg. three times weekly maintain most or all of the benefit for long periods. An alternative method, described by Hench, is to alternate periods of daily injection with periods of several weeks' rest from treatment.

The dosage of ACTH is less regular and varies with different batches. With adults, 25 mg. of ACTH (Armour standard) is given four times on the first day, followed by doses of 10 or 15 mg. four times daily. Patients can often be maintained subsequently for varying periods with smaller amounts.

With children, dosage of these hormones seems to be not so much a function of body size, as to depend upon the severity of the disease. To obtain good antirheumatic effects, as much may be needed as in an adult. The metabolic and endocrine complications may be greater in the child.

Clinical tests with Compound S, progesterone, 17-hydroxy progesterone, Δ^5 pregnenolone, acetoxy pregnenolone, testosterone and 6 other steroids have not proved beneficial. 6 references. 1 diagram.

Fatal Asphyxia From Intratracheal Rupture of a Tuberculous Mediastinal Lymph-Gland. *H. Angelman, Liverpool and W. M. L. Turner, West London, England.* Lancet 2: 842–43, Nov. 5, 1949.

Perforation of the trachea by a caseous mediastinal lymph gland occurred in a boy 6 years of age while he was being treated in the hospital for tuberculous consolidation of the right lung. The authors were present in the ward when the perforation took place. The episode was characterized by extreme dyspnea and cyanosis, and signs of obstructive emphysema in the left lung quickly developed. An attempt to pass a bronchoscope to remove the obstruction was unsuccessful and the child died within twenty minutes. Necropsy showed that a tuberculous mediastinal lymph gland had ruptured into the trachea about half an inch above the bifurcation. Confirmation was obtained of the presence of tuberculous consolidation of the right lung and emphysema in the left lung.

The rarity of this condition is stressed and 4 similar cases reported during the past twenty years are described. Other possible methods of treating this emergency are mentioned. A fatal case of perforation

of the right main bronchus by a caseous mediastinal gland in a boy 22 months of age is described. 7 references.—*Author's abstract.*

Pulmonary Tuberculosis Treated with Streptomycin. *E. T. McEnery, H. C. Sweany and G. C. Turner, Chicago Municipal Tuberculosis Sanitarium, Chicago, Ill.* Illinois M. J. 97: 15–20, Jan. 1950.

Twenty-five children with pulmonary tuberculosis have been treated with streptomycin and observed for periods from 2 to 36 months. Twenty-two were classified as having a progressive primary lesion. Their ages ranged from 8 months to 15 years. Three were classified as having the advanced adult type of pulmonary tuberculosis. These were 11, 12, and 13 years of age.

At the beginning of the study, the majority of the patients received 0.25 Gm. of streptomycin twice daily. This has now been reduced to 0.3 Gm. once daily. The same dose is given to children of all ages. At this lower dosage level no auditory or visual disturbances or other reactions have been seen. Sixteen patients were treated for 120 days. Nine patients were treated for 60 days. Spot checking on cases has shown streptomycin blood levels in the morning before injection to vary from 0.5 micrograms to 1.0 microgram per ml. Six hours after administration of 0.3 Gm. of streptomycin the blood level is usually at 6.0 to 8.0 micrograms per cc. of blood. This is regarded as a good therapeutic level.

Improvement usually begins a week to ten days after starting streptomycin. The fever drops, the appetite and disposition improve, and irritability becomes less. The physical findings do not exhibit much if any change for at least one month. The roentgenograms show little change for three months. All the patients with progressive primary lesions have shown satisfactory improvement. In all but 2 of the 22 patients the sputum has become negative. The hospital stay has been uniformly reduced from roughly two to three years to six to eight months. Those with the adult type have shown less satisfactory results. One of these has died and a second is in a terminal condition. The third patient is improving, and has had a pneumonectomy. 1 table. 2 figures.

Current Status of the Chemotherapy of Tuberculosis in Man, A Summary Report. Report to the Council on Pharmacy and Chemistry, American Medical Association. J. A. M. A. 142: 650–53, March 4, 1950.

The data are based on the results obtained in treatment of approximately 7,000 patients with all types of tuberculosis by 22 different regimens. The study has resolved itself into one of comparative regimens in order to find those with a maximum of therapeutic efficacy and a minimum of undesirable side effects.

In itself, streptomycin can never (or hardly ever) be counted on to cure tuberculosis. Even in those types of disease (e.g., tuberculosis of the alimentary tract and of draining cutaneous sinuses) in which the drug is particularly successful, relapse rates are about 5 and 10%. In pulmonary disease they are about 35% within 12 months after the completion of treatment. There has been a mortality rate of 21% in the 416 cases of pulmonary tuberculosis which have been observed for 2.5 years. Of 66 patients with tuberculous meningitis, 67% have died. Every patient sufficiently ill to receive streptomycin is sufficiently ill to be hospitalized.

Dihydrostreptomycin seems to be somewhat inferior to streptomycin in point of therapeutic efficacy. When examined by caloric tests it has less effect on the function of the vestibular nerve but when given in the larger daily dose of 2.0 Gm. or higher, it may produce a loss of hearing during or even after the completion of treatment. This has rarely been observed with streptomycin. The investigators believe that as long as a daily dosage of 1.0 Gm. of streptomycin is considered adequate therapy the chief value of dihydrostreptomycin will be found in patients with unusual susceptibility to the toxic manifestations of streptomycin or with sensitivity phenomena.

Neomycin is regarded as still too toxic to justify clinical trial in the treatment of such a chronic disease as tuberculosis. It had not yet been possible to produce a sufficiently stable form of mycomycin to permit its clinical evaluation. The theory that a more adequate study of aureomycin might produce some evidence of therapeutic efficiency was exploded. Certain streptomycylamines have been found less effective than streptomycin in vitro. Some thiosemicarbazones are reported to have pronounced tuberculostatic effects in experimental murine tuberculosis. One preparation is now being studied when given alone and in combination with streptomycin.

Para-aminosalicylic acid has been used to a considerable extent in the tuberculosis clinics of Sweden since 1946. It has demonstrable tuberculostatic action both in vitro and in the experimental animal. It has been tried in the increasingly large group of patients whose tubercle bacilli have become resistant to streptomycin. These patients respond much less favorably to para-aminosalicylic acid than does the group with micro-organisms sensitive to streptomycin, when treated by the latter drug. Nothing is known of the optimum dose of para-aminosalicylic acid.

It is almost certain that the conception of a single optimum therapeutic regimen is faulty. The importance of combining surgical procedures with chemotherapy is recognized. The incidence of toxic manifestations to streptomycin has been decidedly reduced by the use of daily doses of 1.0 Gm. or less. The development of resistant micro-organisms has apparently been delayed and its incidence reduced by

the concomitant administration of para-aminosalicylic acid. 7 references. 2 tables.

Results of Eighteen Months of Streptomycin Therapy of Tuberculous Meningitis in Children (*Résultats de 18 mois de streptomycinthérapie des méningitis tuberculeuses de l'enfant*). *J. Chaptal, D. Brunel, (Mlle.) Pietri, A. Levy and R. Jean, Montpellier, France.* Arch. franç. pédiat. 6: 561–73, Nov.–Dec. 1949.

In the past 18 months, 50 children with tuberculous meningitis have been treated wtih streptomycin. Of these, 5 have been under treatment for a period of less than 5 months, and are continuing treatment; 26 died in the course of treatment, but 2 of these died within 36 hours after admission to the hospital, so that only 24 deaths can be attributed to failure of streptomycin therapy. Nineteen (or 44%) are considered cured at the time of this report.

Streptomycin was given by intramuscular injection in all cases. The dose usually employed was 1 to 2 Gm. daily, according to the age of the patient, and gradually reduced as the cerebrospinal fluid showed favorable changes. Therapy was continued until two months after the cerebrospinal fluid had become entirely normal. Intraspinal administration of streptomycin is an essential part of the treatment, although in a few cases in the earlier part of the series it was not employed. The doses employed are 0.1 to 0.5 Gm. according to age, given in one or two daily injections for 10 to 20 days. A second course of intraspinal therapy may have to be given if the protein of the cerebrospinal fluid shows an increase, or is maintained at a high level.

Of the 24 children who died 11 were under 2 years of age, a mortality of 84% in this age group. In 18 of the 24 fatal cases treatment was not begun until the tenth day of the disease or later. Only 2 of these patients had uncomplicated tuberculous meningitis; 12 were in complete coma at the time of admission; 5 showed bulbar symptoms; and 2 a cerebellar syndrome. In 8 of these fatal cases streptomycin was not given intraspinally.

Of the 19 patients who were cured, 3 were under 2 years of age and 12 were 6 to 15 years of age. In 4 the symptoms were those of uncomplicated meningitis; 2 patients were subcomatose, but none were in deep coma at the time of admission to the hospital. In most of these patients, the clinical symptoms of meningitis sometimes were relieved within two to three weeks, usually within two to five months. The changes in the cerebrospinal fluid regressed more gradually. There was usually an increase in the albumin at first, and especially the lymphocytes, lasting one to three weeks, then a gradual but progressive reversal to normal in all the cerebrospinal fluid findings. Streptomycin was given intraspinally at the beginning of treatment in all but one of those recovered cases. The duration of treatment was long, usu-

ally a year or more. The shortest course of treatment was 10½ months.

Most of the patients are free from any sequelae. Four are deaf. One who had ocular paralysis at the time of the onset of meningitis never showed any improvement in this symptom, although otherwise well, and one who had symptoms of petit mal at the onset of meningitis continues to have similar attacks (although the meningitis is clinically and biologically cured) and the electroencephalogram is typical of petit mal. 3 references.

Meningeal Permeability to Streptomycin (La perméabilité méningée a la streptomycine). *M. Darnade, Ch. Dulong de Rosnay and R. Jeautet, Clinique des Maladies Infectieuses, Bordeaux, France.* J. de méd. de Bordeaux 126: 581–83, Dec. 1949.

Fifteen patients were treated with 2 Gm. of streptomycin daily by the intramuscular route. Of these, 6 had no meningitis and little (less than 1 gamma per cc.) or no streptomycin was found in the spinal fluid. Eight with tuberculous meningitis showed 1 to 4 gamma per cc. in the spinal fluid. None was present in a single patient with serous meningitis, and this is offered as a differential aid. In tuberculous meningitis, the spinal fluid levels of streptomycin on such a program varied with the severity of the process and amelioration. After a single intramuscular dose of 1.0 Gm. a maximum cerebrospinal fluid level varying from 8 to 18 gamma occurred in 2 to 2½ hours, falling at 12 hours to 1–3 gamma per cc.

It was felt that intramuscular therapy alone did not produce a sufficiently bactericidal level in the cerebrospinal fluid and was subject to marked variation. Adequate levels of streptomycin in the spinal fluid are most important in the early stages of tuberculous meningitis. During clinical improvement the permeability of the meningeal barrier diminishes so that the streptomycin levels become even less adequate. 6 references.—*A. M. Bongiovanni.*

A New and Practical BCG Skin Test (the BCG Scarification Test) for the Detection of the Total Tuberculous Allergy. *Armand Frappier and Roland Guy, University of Montreal, Montreal, Canada.* Canad. J. Pub. Health 41: 72–83, Feb. 1950.

The authors describe and propose a new BCG scarification test for the detection of the total tuberculous allergy, that is, allergy to tuberculin, allergy to bacillary bodies or proteins, and infratuberculin allergy. This test is based on the acceleration of the local response to the transcutaneous introduction of BCG in tuberculin allergic or infratuberculin allergic individuals. It consists of making two simultaneous scarifications of the skin, the first one as a control, the other one through a drop of BCG special emulsion, and of comparing the reaction due

solely to BCG and that due solely to the wound. Any difference in favor of the former at 24 or 48 hrs. is considered a strong presumption of specificity. At 72 hours after the test, the specific reaction is still persisting on the BCG scarification whenever the reaction to the control scratch has disappeared.

The optimum live or dead BCG concentration for the test—that is, the concentration strong enough to show a reaction in the least sensitive individuals, including those infratuberculin allergic, but still unable to induce scar-forming reactions among strongly allergic subjects—is not less than 10 mg. per cc. and not more than 25 mg. per cc., preferably less.

Of 626 individuals found negative to a strong dose of tuberculin (0.005 mg. P.P.D.), 22.9% were still positive to the BCG scarification test, showing infratuberculin allergy, i.e., an accelerated reaction to BCG and the Willis phenomenon (shortening the pre-allergic period and enhancement of the reactivity to tuberculin). Similar findings were reported by a few authors using intradermal or puncture tests.

The BCG scarification test could be used for the following definite purposes: detection of infratuberculin allergy, epidemiologic surveys of the distribution of tuberculous infection, and as an economical and efficient substitute for serial tuberculin tests in view of an immediate BCG vaccination.

The authors, using this test in a BCG vaccination program, have vaccinated immediately with BCG (6 scarifications of 1 cm.) and without any unwanted reaction all those showing at 24 hrs. a reaction of 2 mm. or less to the BCG test.

The use of a live BCG for the test is likely to make it a booster dose in individuals already allergic, particularly in those whose low tuberculin allergy is then springing to higher intensity, or in those whose faded allergy, (that is, infratuberculin allergy) is reappearing earlier than in subjects absolutely nonallergic. 33 references. 6 tables.—*Author's abstract.*

15. Liver, Kidneys and Spleen

Thrombosis of the Renal Vein in Infants. *Charles Q. McClelland and James P. Hughes, Cleveland, Ohio.* J. Pediat. 36: 214–27, Feb. 1950.

Thrombosis of the renal vein in infants causes a rarely diagnosed syndrome characterized by sudden onset of hematuria or anuria, shock, and appearance of palpable lateral abdominal masses in an infant usually having dehydration as a result of a severe diarrheal disorder. In an eight-year period from 1941 to 1948 inclusive, renal vein thrombosis with infarct of the kidney was encountered in 3 cases of 328 autopsies performed on fullterm infants who survived for at least 24 hours after delivery, but died before the age of one year. Severe

diarrhea was the predominant clinical finding in 31 of the autopsies, including the 3 under discussion whose clinical and pathologic protocols are presented in detail. Thus renal vein thrombosis appears as a significant complication of severe diarrheal disease in infancy.

While the pathogenesis of this disease has not been conclusively established, a combination of the following factors offers the most satisfactory explanation based on the autopsy findings: (1) an exaggeration of the normal neonatal tendency to dehydration and an hydremia, secondary to a severe diarrheal disorder; (2) possible renal vascular endothelial damage secondary to extra-renal infection characteristically present; (3) a normally slow renal circulation secondary to the unique nature of the renal vascular pattern with its double capillary network. These result in formation of thrombi in the interlobar and arcuate veins with retrogressive and progressive renal venous thrombosis.

The syndrome is initiated by a progressive severe diarrhea, frequently complicated by severe dehydration, metabolic acidosis, and shock. After one to four days gross or microscopic hematuria occurs, associated with proteinuria and often oliguria or anuria. Simultaneously a firm, smooth, moderately tender mass becomes palpable in the region of one or both kidneys. The mass may enlarge. If bilateral it is of the gravest prognostic significance. With the persistence of diarrhea, dehydration, hematuria, and anuria if present, collapse develops followed shortly by death. The characteristic urinary findings consist of gross or microscopic hematuria or hemoglobinuria with varying degrees of pyuria, cylinduria or albuminuria. The excretory and retrograde urographic observations as previously described by Melick and Vitt, and Campbell are summarized.

The adequacy of the preoperative and postoperative supportive therapy in correcting the shock, dehydration, metabolic acidosis, oliguria, anuria and electrolyte and protein depletion determines the success of the operative procedure. Prompt surgical intervention and nephrectomy with precise examination of the renal pedicle for determination of the location and extent of the thrombus is the treatment of choice. Ligating the renal vein proximal to the central extension of the thrombus is important. Anticoagulant therapy may be beneficial. —*Author's abstract.*

16. Metabolic and Systemic Disorders

Nonlipid Reticulo-Endotheliosis: Letterer-Siwe's Disease. *E. L. Schafer, Western Reserve University, Cleveland, Ohio.* Am. J. Path. 25: 40–83, Jan. 1949.

In 1936 Abt and Denenholz formulated the diagnostic criteria for Letterer-Siwe's disease as: (1) splenomegaly; (2) hepatomegaly; (3) localized tumor over or in the bone; (4) secondary anemia; (5) reticu-

loendotheliosis; (6) nonfamilial fatal disease of infants. Including the 3 cases in this article, approximately 24 acceptable cases have been reported since Letterer's initial case in 1924. The problem of whether this syndrome is infectious, neoplastic or metabolic in origin is discussed, and it is concluded that the disease does not clearly fit any of these categories. Several authors have proposed that Letterer-Siwe's disease, Schüller-Christian's disease and eosinophilic granuloma are all variants of the same pathologic process. Twelve cases have been found in medical literature that exhibit characteristics of both Letterer-Siwe's and Schüller-Christian's disease and it is thought that this relationship may be valid. Similarities between eosinophilic granuloma and the other two diseases are not so distinct. It is urged that everyone become more aware of this disease and that additional cases be reported so that the etiology and the relation to other diseases of the reticuloendothelial system can be clarified. 52 references. 1 table. 2 figures. 11 illustrations. *A. N. Evans.*

17. Milk; Infant and Child Feeding

A Naturally Fortified Milk Modifier. II. Clinical Studies of Apple Syrup as a Carbohydrate for Infant Feeding. *Irving J. Wolman, Benjamin Dickstein, J. Albright Jones, Bernhard Spur, John Githens, Rae Nicholas and C. N. Christensen, Children's Hospital, Philadelphia,* Pa. J. Pediat. 36: 594–97, May 1950.

Clinical and laboratory studies of a partly neutralized apple syrup with added pectin showed it to be a satisfactory carbohydrate modifier for infant feeding. The studies were carried out with normal infants, newborn and premature infants, hospitalized infants, and anemic infants and children.

The syrup did not produce gastrointestinal disturbances and was well tolerated. It mixed well, even with cold milk. It had a tendency to counteract constipation, and may have a laxative action when fed in excess. It should be given in reduced dosage during the first week of life and in periods when the infant has a tendency toward loose stools.

Presumably because of its nutritionally available iron, blood formation in children with anemia seemed to be stimulated by the apple syrup. 2 references.

18. Miscellaneous

Hyaluronidase in Administration of Fluids. *Alexander A. Jaworski and John E. Farley, Jr., Providence, R. I.* Am. J. Dis. Child. 79: 59–64, Jan. 1950.

Hyaluronidase, a relatively new agent for facilitating fluid administration by hypodermoclysis was investigated. Numerous toxicity

studies were performed to insure the relative safety of alidase (G. D. Searle & Co., commercial hyaluronidase product).

In a study of 10 normal children, 250 viscosity units of hyaluronidase were injected subcutaneously into the left thigh daily for seven days. No evidence of toxicity was found by studies of blood levels for uric, creatinine and CO_2 combining power, cephalin flocculation, bleeding time, coagulation time, heparin-protamine titration, clot retraction, blood count, urinalysis, electrocardiogram, and local reactions. No intradermal skin test sensitivity was noted in 150 individuals.

Simultaneous bilateral hypodermoclyses were administered to 100 acutely ill infants and children weighing 8 to 30 lb. One thigh received glucose-saline solution with the addition of 25 viscosity units of hyaluronidase injected into the tubing before starting the clysis, while the other thigh received plain glucose-saline solution. For a volume of 150 or 200 ml. of fluid, hyaluronidase decreased the average time required for administration from 175 minutes to 52 minutes, a 3.3 fold increase in rate. The sites receiving fluid plus hyaluronidase exhibited only moderate swelling of a diffuse and soft nature. 12 references. 2 tables.

Relation between Cyclic (Acetonemic) Vomiting and Migraine (*Über die Beziehungen zwischen acetonamischen Erbrechen und Migraine*). *B. Vahlquist, Stockholm, Sweden.* Ann. pædiat. 173: 272–80, Oct. 1949.

In 24 cases of cyclic (acetonemic) vomiting in children, a follow-up study showed that 4 of these children in later life developed attacks of migraine. But as the average age at the time of the follow-up study was 14 years, it is possible that migraine may develop in later years in others in this series. Of 22 mothers of the children with cyclic vomiting, 7 gave a history of typical migraine. In a small group of patients there was a direct relationship between the cyclic vomiting and migraine, in that the attacks of vomiting alternated with typical attack of migraine, or that the attacks of vomiting may have been true migraine attacks because of the occurrence of a headache of the migraine type before the vomiting became severe. In a larger group in this series of cases, however, there was no association of the attacks of cyclic vomiting with symptoms of migraine, and no family history of migraine. In these cases signs of an unstable nervous system were often present, and the possibility that migraine may develop later cannot be excluded. 9 references. 1 table.

19. Musculoskeletal System

Myotonia Congenita. *Donald R. Hirsch, Joseph Dancis and Richard S. Ward, New York, N. Y.* J. Pediat. 35: 760–66, Dec. 1949.

A case of myotonia congenita (Thomsen's Disease) in a 6-year-old Negro boy is presented. Both mother and grandmother are believed to have had the same disease. Characteristic responses to a series of tests were elicited: (1) increased muscle excitability to a galvanic current; (2) exaggeration of the myotonia with prostigmine; (3) relief of symptoms with quinine, and (4) the dual nature of the myotonic reaction as described by Ravin.

Because of the similarity in reaction between a myotonic muscle and a muscle poisoned by veratrine, a search was made in this patient for a veratrine-like substance. The patient's blood was tested against the sartorius muscle of a frog (sensitive to veratrine in dilutions as high as 1:5 million). No veratrine-like substance could be detected. An in vivo experiment patterned after Mary Walker's classical experiment on myasthenia gravis was attempted. This, too, failed to demonstrate a humoral substance.

In another experiment, the patient was completely curarized. This had no effect on the myotonic reaction of the brachio-radial reflex. Since curare exerts its effect on the myoneural junction or distal to it, this places the abnormality of myotonia somewhere in the muscle fiber. 15 references. 3 figures.—*Author's abstract.*

20. Nervous System

Electroencephalography Following Head Injuries in Children. *Karl-Axel Melin, Stockholm, Sweden.* Acta paediat. Upps. Supp. 75: 152–74, 1949.

Electroencephalographic examinations following 134 acute head injuries in children were made at Kronprinsessan Lovisas Childrens Hospital in Stockholm. Seventy-two of the children were examined within 24 hours and 117 within 4 days after the trauma. There were EEG changes among all groups, but most of the pathologic findings were among the most severely injured.

Investigation of the connection between the type of injury and the severity of the EEG changes showed that within the slight injury groups a large number of EEGs were normal or only slightly changed, while the most severely injured all showed markedly pathologic records. As in adults, skull fractures in older children were usually combined with pronounced and persistent EEG changes. In smaller children this did not seem to be the case.

Studies of the connection between the clinical healing course and the disappearance of EEG changes showed good correlation between the two. In all cases, however, the EEG findings were both more pronounced than the clinical condition indicated and more persistent than the clinically observable symptoms. Over a month after the trauma 7 patients showed abnormal records; 4 of these had persistent symptoms.

In children whose injuries are healing a renewed trauma seems to produce a proportionally more powerful effect than the first.

The EEG changes observed included general dysrhythmia of various degrees, often combined with more or less pronounced hypersynchronia, bursts of large 2-5/sec.-waves, and in isolated cases so-called "depressed activity." In 18 cases there were localized findings, in 11 in connection with fractures of the skull.

Electroencephalography is a valuable method of examination in cases of acute cerebral injury in children. It is an effective complement to the clinical examinations and in a large number of cases permits objective recording both of the nature and severity of the injury and of the healing process. 16 references. 7 figures.—*Author's abstract.*

Subdural Hematoma and Effusion in Infants, Review of Fifty-Five Cases. *Arthur R. Elvidge and Ira J. Jackson, McGill University and the Montreal Neurological Institute, Montreal, Canada.* Am. J. Dis. Child. 78: 635–58, Nov. 1949.

An analysis is given of the findings in 55 infants with subdural hematomas or effusions, and the importance of maintaining adequate fluid and protein balance as an adjunct to the surgical treatment of this disorder is emphasized. The term hematoma is applied when a blood clot is seen within the subdural effusion and the term xanthochromic effusion when the color of the fluid is yellow or orange brown. Xanthochromia is the result of breakdown products of blood. None of the infants in this series had colorless subdural effusions.

The 55 infants have been classified under four etiologic headings: definite birth injuries, probable birth injuries, postnatal head injuries and unclassified causes. The symptomatologic and other findings presented characteristic features within each group.

1. Definite Birth Injuries. The 10 newborns in this group had cranial birth trauma such as skull fractures or tentorial tears. Spasticity was the most uniform physical finding. Four infants had tense fontanels. The picture of hydrocephalus was seen only in the oldest patient, aged 21 days. Seizures, abnormal neurologic findings, respiratory difficulties and opisthotonos each occurred in about one-third of the babies. Treatment consisted of elevation of depressed fractures, trepanation and drainage or craniotomy and evacuation of fluid. Six infants died immediately after the operation or during the first postoperative day. There was a high (90%) incidence of bloody subdural fluid. One infant had clotted blood. The single instance of xanthochromic effusion was the 3-week-old infant with an enlarged head and skull fracture. No subdural membrane was found in any of these patients. One had a bloody subdural effusion in the posterior fossa. Effusions were bilateral in eight.

2. Probable Birth Injuries. There were 26 patients with indirect but suggestive evidence of intracranial birth injury. Their ages ranged from 13 days to 14 months, with an average of 5.34 months. Fourteen had a history of difficult labor and instrumental delivery; 11 presented signs and symptoms recognizable since birth and 3 were born prematurely. On examination all had hydrocephalus. Sixteen had had convulsions. Five exhibited spasticity and 2 opisthotonos. Fifty per cent gave a history of taking feedings poorly. Seven had respiratory difficulties, usually during the first week of life only. There were scattered neurologic findings of no localizing value. The operative treatment consisted of subdural taps, trepanation with or without drainage and, when necessary, craniotomy. The subdural effusions were bilateral in 19 and unilateral in 7. In the bilateral effusions the subdural fluid (bloody or xanthochromic) was usually the same on both sides. In instances of patients treated with repeated subdural taps, the bloody fluid often became xanthochromic within less than a month.

Xanthochromic fluid was found on admission in 18 infants, bilateral in 14 and unilateral in 4. Bloody fluid was obtained in 8: bilateral in 5 and unilateral in 3. The protein content of the xanthochromic fluid ranged from 148 to 3,390 mg. per 100 ml. In several instances the subdural fluid was bloody and had a protein value comparable to that of blood—around 6,000 mg. per 100 ml. Blood clots were seen within the effusion in 4 patients. Subdural membranes were observed in 15. The spinal fluid from 7 infants was clear and colorless and contained a normal amount of protein. Two others had yellow spinal fluid with an elevated protein value. The 15-day-old infant had bloody fluid. Five infants died following operation. Fourteen others have been followed for from 6 months to 6 years. Seven have developed normally after operation. Seven seen 6 to 30 months after operation had mental retardation and some neurologic deficit.

3. Postnatal Head Injuries. The 9 patients in this group were reported to be in good health before their accident. Their ages ranged from 2 months to 30 months, with an average of 14 months. Hemiparesis, reflex changes, spasticity, respiratory difficulties, restlessness, unconsciousness, shock and a history of a recent head injury were the predominant observations. Six unconscious infants underwent operation soon after being hospitalized. The subdural fluid was bloody in all, and 5 had blood clots. Two effusions were bilateral and 4 were unilateral. One infant received a lumbar puncture on admission which revealed bloody spinal fluid under increased pressure. All 6 died within 12 hours after operation. The autopsies revealed subdural and subarachnoid hemorrhages, skull fractures and lacerations of the brain. The other 3 patients were hospitalized from 2 to 6 weeks after the head injury. Two had bloody effusions and 1 had bilateral xanthochromic

effusion. One infant, 2 years after treatment by trepanation, presented no evidence of mental retardation and only a slight hemiparesis.

4. Unclassified Group. In 10 infants with subdural effusions there was no history of a difficult labor, instrumental delivery, prematurity, symptomatology since birth or postnatal injury. The ages at the time of hospitalization ranged from 2 to 24 months, with an average of 12.5 months. They were brought to the hospital as chronically ill patients. All but 1 infant presented much the same clinical picture as did the patients with the probable birth injury or the chronically ill infants with the postnatal injury. Eight had entered either because of an enlarged head or because of seizures. Hydrocephalus, seizures and paresis were the most prevalent signs. Three had papilledema. The onset of the symptoms ranged from 2 days to 16 months before admission to the hospital. Treatment consisted of subdural taps, trepanation and drainage and craniotomy. Two patients died of shock after operation. Bilateral subdural effusions were seen in 7 patients. Bloody fluid was observed in 2. Protein values of 525 to 4,120 mg. per 100 ml. were reported on the subdural fluid of 2 patients. A subdural membrane was found in 4. Five had one or more lumbar punctures performed, and in all instances but one the fluid was clear and colorless with normal protein values. The one abnormal spinal fluid contained 48 mg. of total protein per 100 ml. Four of these patients were followed for 1 to 3 years. Three showed no evidence of mental retardation (1 after subdural aspiration, 1 after trepanation and 1 after craniotomy). The fourth was mentally and physically retarded 1 year after subdural aspirations.

Every infant with hydrocephalus or seizures should be suspected of having a subdural effusion, especially when there has been a recent head injury. The only positive method of diagnosing a subdural effusion without direct visualization is by subdural puncture. In most instances these punctures should be made at the lateral angles of the anterior fontanel. Puncture posteriorly through the lambdoid suture may be desirable in very young infants. If colored fluid is not immediately obtained, aspiration should not be carried out because cortex is easily aspirated. Slowly dripping clear fluid generally indicates that the point of the needle is in the subarachnoid space. If internal hydrocephalus is markedly advanced, the needle may have entered the ventricle, as the cortex is extremely thin in such patients. Bloody fluid is indicative of recent hemorrhage, while xanthochromic fluid is an evidence of old hemorrhage. Protein determinations of the fluid, with the amount removed, give an index of the actual amount of protein lost. Bloody collections contain as much as 6,000 mg. of total protein per 100 ml. and xanthochromic fluids as much as 3,000 mg. The subarachnoid fluid may retain a normal value of protein unless taken

shortly after a head injury, when the value may be elevated. Roentgenograms of the skull may reveal evidence of a fracture or separation of the suture lines. When hydrocephalus is suspected, pneumography is of special value in diagnosing the degree and type or the existence of a subdural effusion. If ventricular dilatation and increased pressure exist, ventriculography by way of the anterior fontanel is the method of choice. There appears to be no characteristic feature in the encephalogram for subdural effusion in infants, unless perhaps a fluid level seen in the subdural space when positioning the head for the brow-up and brow-down films, or a displacement of the brain away from the inner table of the skull. If the effusion is unilateral or greater on one side than on the other, the midline structures will shift away from the side of the lesions.

The surgical treatment consists of emptying the subdural space and completely removing the membranes when they are present. The acute subdural hematoma, as in definite birth injuries, is best treated by aspiration, for no membrane is usually present at this early stage. The chronic subdural effusion, as in the probable birth injuries and the unclassified groups, is best treated, after confirmation of diagnosis by subdural tap, by trepanation for identification of membranes and, if their presence is confirmed, by early complete removal of the inner membrane. A portion of membrane left over one pole can restrict its expansion and thereby increase the potentiality toward mental retardation.

Failure to maintain an adequate fluid and protein balance contributes to a high operative mortality. The protein lost to the subdural space ranges from 300 to 6,000 mg. per 100 ml. This lost protein can not be utilized for body needs. It also attracts extracellular fluid from outside the subdural space. Subdural effusions often increase in size during the months following the original injury. The blood within the subdural hematoma slowly breaks down over a few months; the disintegration of blood increases the osmotic pressure and the blood becomes diluted. At times the protein content of fluid from repeated aspirations increases rather than decreases, or remains more or less constant. This suggests the possibility that molecules of serum protein are added by way of exudation through vessel walls. The slow but gradual loss of fluid and protein into the subdural space is one reason for the pale and undernourished appearance of so many of these infants. In two infants whose case reports are given, approximately 5% of the daily protein requirements were lost through subdural aspirations every few days. 10 figures. 2 tables.

Apoplectiform Crises in Children. (*Ueber apoplektiforme Insulte im Kindesalter*). *Hans-Ulrich Sauerbrei and Paul Stüper, Essen, Germany.* Ztschr. f. Kinderhlk. 67: 481–94, Heft 5, 1950.

Apoplectic crises, especially with hemiplegia, are relatively rare in childhood. Little is known concerning the actual incidence of this condition. Eiologically, injuries of the intracranial vessels should be considered primarily, such as rupture, bleeding, embolism or thrombosis, as well as inflammatory lesions of the vessels. Infections may be a cause, such as endocarditis, meningitis and encephalitis, as well as infectious diseases leading to encephalopathy and cerebral vascular damage. Even ordinary infections such as tonsillitis, otitis media or pyelitis may be responsible. It is necessary to consider hemorrhagic blood disease, hypertension, hydatid cysts, Osler's disease or Sturge-Weber's disease, and carbon bisulfide poisoning.

Eight cases are presented in detail. In one, the hemiplegia was interpreted as an early symptom of a clinically non-manifest Werlhof's disease. The second suffered hemiplegia on the basis of an apparently infectious-toxic intracerebral hemorrhage following measles. The third was one of apoplexy with subsequent spastic paresis of the left leg, following postinfectious myelitis. In the fourth, left hemiplegia developed following a cardiazol or fever convulsion in pneumonia. In the fifth, hemiplegia was attributed to a subarachnoid hemorrhage, following vascular rupture possibly due to traumatic aneurysm. In the sixth there was rupture of a varicose dilatation of the choroid vein. The seventh was suffering from endocarditis with rupture of an inflamed artery of the base of the brain. In the eighth, apoplexy and death were attributed to a subdural empyema, with circumscribed purulent leptomeningitis following frontal sinus empyema. Another case is mentioned of massive subarachnoid hemorrhage in so-called monocyte myeloblast leukemia. These children ranged from one and three-quarters to twelve years of age. Three of the patients died and autopsies were performed. In 2 cases, the hemiplegia retrogressed completely; three others were left with slight residual symptoms. 12 references. 1 figure.

Electivity in the Therapy of Epilepsy. *M. Eszenyi-Halasy and T. Lehoczky, Budapest, Hungary.* Mschr. f. Psychiat. u. Neurol. 119: 36–44, Heft 1, Jan. 1950.

Tridione (3,5,5 trimethyl-oxazolidin-2,4-dion), known as ptimal in Hungary, has a selective effect on petit mal seizures. It has no effect on grand mal convulsions due to organic disease or on the types of petit mal or so-called symptomatic epilepsy. In cases of petit mal combined with grand mal, the drug should be administered together with other anticonvulsants such as the bromides, barbiturates and diphenyl-hydantoinates.

The toxic effects of tridione consist of photophobia, noted in 10.8% of cases, and slight lowering of the white cell count in 25%. The white cell count should, therefore, be taken every 2 weeks during treat-

ment and medication should be discontinued for a day or two when the cell count is reduced, or for 1 to 2 weeks if such a reduction persists or becomes progressive. Transitory interruption of the treatment is of little significance since the effect is more lasting than with other remedies. The favorable effect is in inverse proportion to the age of the patient.

Tridione is recommended especially for children in whom a recurrence of attacks may be suspended for weeks following cessation of treatment. Good results were obtained in 16 cases in which other methods had failed. This remedy is considered better for overcoming attacks of petit mal than any other known anti-epileptic, and good results have been reported in both genuine and mixed types of petit mal. Caution is urged, however, as several deaths due to agranulocytosis have been reported. The recommended dose is 3 tablets daily, each 0.10 Gm.

These results are in agreement with observations made in this country and elsewhere. In general the recommended dosage of tridione for older children and adults varies from 0.9 to 2.1 Gm. daily in three or four equally divided doses. Occasionally larger doses have been found necessary.

Treatment is inaugurated with small doses and increased in accordance with the response of the patient or as tolerance to the drug is established. In older children and adults an initial dose of 0.9 Gm. daily is recommended. If necessary, the daily dose is increased by 0.3 Gm. at biweekly intervals until relief is obtained, until toxic symptoms appear or until double the initial dose is being administered. For infants, the initial dose should be 0.3 Gm. daily; for children 2 to 6 years, 0.6 Gm.

When increased dosage does not reduce the number of seizures, the increase in dosage should be discontinued. For maintenance, the minimum dose giving satisfactory relief should be continued. Rarely, blood dyscrasias appear. Patients should be examined at monthly intervals, including an examination of the formed elements of the blood and hemoglobin. Patients must be instructed to report promptly the occurrence of a rash, undue visual disturbances or any other unusual symptoms.—EDITOR.

Evaluation of Tolserol in the Treatment of Children with Cerebral Palsy. *Eric Denhoff, Raymond H. Holden and Caroll M. Silver, Providence, R. I.* New England J. Med. 241: 695–98, Nov. 3, 1949.

Sixteen cerebral palsied children, predominantly spastics, ages 3 to 8 years, who have been attending the Meeting Street School, were studied to determine the possible relaxant effects of tolserol (3 orthotoloxy-1,2-propanediol). This drug has been reported to have a beneficial relaxant effect on muscle spasm, spasticity and rigidity, and an

ameliorating effect on tremor and involuntary movement of extrapyramidal origin as well as a favorable action upon behavior. The average dosage of the drug, computed on Fried's rule, was 33 mg. per pound per twenty-four hours, administered orally in solution in six divided doses daily. A control group was used. All children were given complete neurologic, orthopedic, and psychomotor examinations as well as personal-social ratings and laboratory studies before, during and after the study. There was no definite overall improvement noted. However, there was a diminution of exaggerated reflexes in 56.25% of the children. Orthopedic improvement was slight. There were no significant differences in the psychomotor tests on or off the drug although locomotion tended to be slightly improved. Behavior changes were not appreciable and there were no noticeable toxic effects. 5 references. 1 table.—*Author's abstract.*

21. Newborn Period, Prematurity

Pemphigus Neonatorum in Maternity Hospitals. An Epidemiological Study. *Gunnel Melin and Gösta Wallmark, Stockholm, Sweden.* Acta paediat., Upps. Suppl. 75: 175–86, 1949.

During a minor epidemic of pemphigus neonatorum occurring in a maternity ward, bacteriologic investigations were carried out. The staphylococci isolated were typed with the aid of bacteriophages. The staphylococcus causing pemphigus did not fit into the type scheme but reacted in a characteristic way to one phage. This same type also occurred in some healthy children and in the air and floor dust. Investigation in a ward that was free from pemphigus yielded just as abundant an occurrence of staphylococci.

The results support the idea that the spread of staphylococci proceeds in several ways. Mass infection may take place in the maternity ward although the bacteria occur more commonly in the nursing ward. The staff, and possibly the mothers as well, act as carriers of the infection. The infants also contribute to the spread of the infection, not only through acting as sources of infection for the staff, but also by secreting abundant quantities of bacteria that find their way to the air, floor dust, baths and nursing tables. 15 references. 4 tables.—*Author's abstract.*

Effects and Fate of Human Serum Albumin Administered Intravenously and Orally to Premature Infants. *Clement A. Smith, Kenneth G. Phillips and Robert O. Roth, Boston, Mass.* J. Clin. Investigation 29: 218–26, Feb. 1950.

Repeated intravenous injection of concentrated human albumin in bi-weekly doses of 0.5 Gm./lb. (1.1 Gm./Kg.) or 0.75 Gm./lb. (1.6 Gm./Kg.) for from four to eight weeks in two sets of 13 premature infants

each, produced slight (approximately 15%) elevations of serum albumin, as compared to 27 control infants. Oral administration of 0.5 Gm./lb. (1.1 Gm./Kg.) at similar intervals produced no effect on the serum albumin of 18 premature infants. No effect of albumin by either route was noted in the weight, hemoglobin level, red cell count, or general course of either group. The elevation in serum albumin was not sustained after the treated infants were discharged. Three weeks later their serum albumin concentration had fallen; that of the controls had risen, and both groups were approximately identical. Hematocrit changes indicated that 1 Gm. of injected albumin resulted in temporary addition of 15 cc. to plasma volume. Balance studies of 9 infants indicated only partial retention of the N of injected or ingested albumin. This tended to be greater in infants given low protein diets. It is suggested that the failure of premature infants to retain injected serum albumin as such (or to use its N component for serum protein synthesis) may be related to their low capillary hydrostatic pressures rather than to inadequate powers of synthesis. 11 references. 5 figures. 4 tables.—*Author's abstract.*

Methyl Testosterone and Plasma for Premature Infants. *A. M. Earle, Little Rock, Ark.* J. Pediat. 36: 87–90, Jan. 1950.

This study was designed to demonstrate the effectiveness of a combination of methyl testosterone and plasma in the treatment of premature infants. Of a group of 36 patients studied, using a birth weight of 2,500 Gm. or less as the criterion for prematurity, 23 were used as controls. Thirteen others were given 5 mg. of methyl testosterone in the formula daily and 100 to 150 cc. of plasma daily by gavage or by bottle. This treatment was continued until a weight of 2,722 Gm. was reached. All babies received some formula, vitamins and a hypodermoclysis of 2½% of glucose in water daily as indicated by skin turgor. The initial group showed an average weight gain of 9 Gm. daily and an average hospital stay of 58 days. The treated group showed an average weight gain of 22.4 Gm. daily and an average hospital stay of 25 days. No untoward effects, such as endocrine changes or jaundice, were noted. 5 references. 1 table.—*Author's abstract.*

Meningitis in Premature Infants. *B. M. Kagan, J. H. Hess, B. Mirman and Evelyn Lundeen, Michael Reese Hospital, Chicago, Ill.* Pediatrics 4: 479–83, Oct. 1949.

Of 12 premature infants with meningitis, *Escherichia coli* was cultured from the spinal fluid of 9 (with another organism in 3 of these). Of these 12 infants, all but one died. The one who survived weighed less than 1,000 Gm. when taken ill. Her meningitis was refractory to penicillin and sulfonamides, with cerebrospinal fluid cultures still positive after five days' trial. Streptomycin was then given, as follows:

1 dose of streptomycin 0.025 Gm. in 1 cc. of distilled water injected intrathecally; 0.125 Gm. in 0.5 cc. intramuscularly every three hours. The intramuscular streptomycin was continued for a total of seven days. Some clinical improvement was noted in twenty-four hours, and by three days the cerebrospinal fluid was bacteriologically sterile. The child's subsequent growth has been without residual complications.

It is emphasized that the early diagnosis of meningitis in premature infants is difficult. Fever, cyanosis and vomiting may be the only signs. Fever in a premature infant, particularly without evidence of another cause, should lead to a consideration of meningitis. Nuchal rigidity, bulging fontanelle and convulsions are usually absent. When they are present, they are late signs. Since the majority of cases of meningitis in premature infants are due to gram-negative organisms, streptomycin should be given to newborn and premature infants with meningitis unless or until it can be determined that the meningitis is caused by some other organism. It may be wise to administer both sulfonamides and streptomycin to these patients. 12 references. 2 tables.

22. Nutrition

Surveys of Nutrition of Populations: Iron and Anemia. *John B. Youmans, E. White Patten, Ruth Kern, Ruth Steinkamp, Howard Johnson and Constance Ball, Vanderbilt University, Nashville, Tenn.* Am. J. M. Sc. 219: 30–39, Jan. 1950.

A study was made of the nutrition of a rural population in middle Tennessee with respect to iron. Dietary histories were carefully taken, and the iron in the diet was calculated from food analyses cited by Rose. The laboratory tests included the red blood cell count, determination of hemoglobin, hematocrit, and examination of a blood smear. From these the mean corpuscular volume, the mean corpuscular hemoglobin and the mean corpuscular hemoglobin concentration were calculated. Venous blood samples were used.

The daily intake of iron for the childhood groups was often below the levels commonly recommended. The percentage of those receiving less than the recommended allowances of the Food and Nutrition Board (National Research Council) ranged from 55 to 75% of the white children and 75 to 85% for the Negro. The hemoglobin levels, however, were rarely below the normals cited by Wintrobe, except for the Negro children aged 13 to 15 years.

With respect to hematocrit, white children aged 1 to 3 and 4 to 6 had low values in 14.3 and 9.7%, respectively, while children 7 to 9 and 10 to 12 had low values in only 3.2 and 2.4%. Among the Negro children the same pattern occurred, with children aged 1 to 3 and 4 to 6 having 25.0 and 15.0% low hematocrit values. Of the entire series,

however, there were only 2 children with values 2 standard deviations below the lower value of normal (Wintrobe). Few children had low mean corpuscular volumes. Low mean corpuscular hemoglobins appeared among the children, (through age 15), being found in 11 white (4.8%) and 22 Negro (16%). As for low mean corpuscular hemoglobin concentration, 119 (32.6%) of children aged 1 to 16 had this abnormality, 20% among white and 53.6% among Negro. There was an unexpected and surprisingly frequent macrocytosis. Some 40% of Negro and 35% of white subjects had a mean cell volume above the arbitrary limit of "normal" (2 standard deviations above Wintrobe's upper limit of normal). Many of these children had a mild anemia.

In the population as a whole a considerable amount of macrocytic anemia was found. The population exhibited little obvious nutritional deficiency disease but consumed a diet that not infrequently was below desirable standards. This macrocytosis suggests a common dietary deficiency of a factor or factors closely concerned with maintaining a normal blood. 7 references. 4 tables.

The failure to find low hemoglobin values in the great majority of the children (except perhaps at puberty) despite the so-called comparatively low intake of iron indicates that the Recommended Daily Allowances call for a liberal excess of iron for nutritional safety.

The higher incidence of the detected macrocytosis within the large Negro segment of the population may be associated with the sickle-cell disturbance, which often of itself produces macrocytosis. The data for the Negro group must therefore be interpreted with reservations, since tests for sickling were not done.—EDITOR.

Malnutrition and Starvation in Western Netherlands, September 1944–July 1945, Parts I and II. The Hague, General State Printing Office, 1948.

This is a two-volume summary of the experience of the Dutch, British, Canadian and United States medical and public health groups who were responsible for the nutritional rehabilitation of Western Netherlands during the War. The printing was made possible by the Netherlands Government.

A factual summarization is given of the health of the Dutch population before liberation from the German occupation, the preparations made for relief, the organization and conduct of the nutritional surveys, and the results of the social, clinical and laboratory studies which were feasible to do. Discussion and interpretation of the results have been purposely kept at a minimum, to avoid controversy and to permit the individual investigators to analyze their findings independently and at length in recognized medical literature.

Among the observations made was the finding that the gastrointestinal tract of seriously starved persons can digest foods, such as sep-

arated milk powder and even a large quantity of fats (butter), with a facility that was not expected. Only in the very last stage of starvation, when the subjects were almost moribund, was direct feeding of no value. Predigested foods of the type of protein hydrolysates were not essential for resuscitating patients in the last stages of exhaustion from starvation.

Hunger-edema was widespread, particularly among older adults, but it could not be explained on the simple biochemical and physical basis of lowered plasma protein and osmotic pressure. It seemed to be due to a disordered function of the capillaries, leading to undue permeability. The individual factors involved in this disordered action were not identified.

What starving persons need is food and plenty of it. The experience in the Western Netherlands did not support the popular view that they need careful nursing back to a condition in which they can take a full diet. When starvation is complicated by serious vitamin deficiencies, as often it was in the Far East, the disturbance may be more complex. A person suffering from simple starvation should be placed as quickly as possible on a diet of high energy value and high protein content. The psychological condition of the underfed population constituted one of the greatest difficulties. Apathy and irritability were outstanding problems.

How many died "will never be known, but it is probable that at least 10,000 lost their lives by starvation because the occupying power failed in its obligation to sustain civilian population that was under its authority. The Editorial Committee wishes to record its considered opinion that there is no justification for the ruthless sacrifice of a civilian population." 187 pages and 70 figures in Part I; 299 pages and 43 tables in Part II.

A Comparative Study of Protein Balance and Infant Growth with Human and Cow's Milk and a Protolysate of Liver (*Étude comparative des besoins azotés et de la croissance du nourrisson normal alimenté au lait maternel, au lait de vache et au proteolysat enzymatique de foie*). *A. Rossier, A. Beaurillain, and H. Gascuel, Clinique de Puericulture, Paris, France.* Arch. franç. pédiat. 6: 582–94, 1949.

Protein utilization and body growth were studied in 6 healthy infants aged 1 to 3 months on various dietary regimens. Protein hydrolysates, human and cow's milk were given at different periods to the same infant. Generally the caloric intake and proportions of fat, protein and carbohydrate were constant.

Nitrogen balance studies indicate the following percentage retention on each schedule: maternal milk 50–60%, protein hydrolysate 43–54%, cow's milk 31–37%. There was a wide daily variation in a single infant on maternal milk which was far less marked for protein hydroly-

sate. On the basis of the fecal nitrogen, the "coefficient of digestion" was highest for protein hydrolysate (81–98%) and extremely variable for maternal milk (77–93%). On a constant protein intake the sharpest weight gain occurred on maternal human milk. However on a liver protolysate as the sole source of protein, there was satisfactory growth and a nitrogen balance little different from that of human milk.

Roughly, 1.0 Gm. protein nitrogen of human milk is found equivalent to 1.6 to 1.7 cow's milk and 1.8 of liver hydrolysate, in the infant. Infection on a constant diet caused a temporary loss in weight and a fall in nitrogen positive balance (8%). 13 tables. 6 figures. 25 references.—*A. M. Bongiovanni.*

The differences in percentage retention of nitrogen between maternal and cow's milk is surprisingly great as reported. This was probably due to incomplete digestion of cow's milk curds in the intestinal tract. —EDITOR.

23. Parasitic Diseases

Amoebiasis in Infancy. *P. C. C. DeSilva, Colombo, Ceylon.* Brit. M. J. 2: 1208–10, Nov. 26, 1949.

A total of 40 cases of amebiasis in infants under 2 years of age is reported from Colombo, Ceylon. Among 291 cases of infantile diarrhea in the same age group in which the stools were examined, the percentage of positive cases averaged 15.9%. Fourteen infants were under 1 year and 26 between 1 and 2 years of age. The cases were collected solely from the indigenous population. They were classified into two groups—acute and chronic. Only 4 of 19 infants in the acute cases have been followed up and none showed any relapse. Only 2 of these had blood in the stools but mucus was commonly seen. There was moderate pain and straining at stool. Colic was rare. The patients were well nourished and showed no wasting or dehydration. The tongue was clean, the skin elastic and the conjunctivae clear.

In the chronic type, on the other hand, there was retardation of growth and impairment of general health. The skin was dry, the conjunctivae brown, the tongue coated, and the infant irritable, whining and resentful of examination. Sleep was often disturbed. Hypochromic anemia which was resistant to iron until the amebiasis was treated was encountered in a few cases. No hepatitis or other extra-intestinal syndromes of amebiasis was noted in this series. Entamoeba histolytica minuta was present in 29 cases and E. histolytica in 11. The minuta form was responsible in every case in which blood was present in the feces. Charcot-Leyden crystals were present in 9. Seven of these were associated with other intestinal parasites—round worm, thread-worm and whip-worm.

Amebiasis due to the minuta form responded better to treatment.

Emetine and carbarsone were the drugs used. The former in doses of ⅛ to ⅓ gr. (8 to 22 mg.) was given over six to eight days to a total of ¾ to 3 gr. (50 mg. to 0.2 Gm.). Carbarsone was given to 34 patients aged 6 weeks to 2 years in doses ranging from 25 to 62 mg. daily for five days. There were no cases of arsenical poisoning. Of the patients followed up 80% had satisfactory results. 13 references. 2 tables.

Bronchopulmonary Geotrichosis in Children. *Ralph H. Kunstadter, Albert Milzer and Frances Whitcomb, Michael Reese Hospital, Chicago, Ill.* Am. J. Dis. Child. 79: 82–90, Jan. 1950.

Geotrichum is a fungus that may produce systemic mycosis resembling coccidioidomycosis and blastomycosis. The organism is a member of the Eremascacea imperfectae family. The genus Geotrichum is quite large and consists chiefly of saprophytic species. The fungus may produce infection of the skin and mucous membranes or of the lungs simulating chronic pulmonary tuberculosis. Thin-walled cavities may develop or the infiltrates may appear as soft, mottled or irregular patchy areas scattered throughout both pulmonary fields resembling coccidioidomycosis, moniliasis, North American blastomycosis, cryptococcus and histoplasmosis. The lesions are not characteristic of any specific type of pulmonary mycosis. A chronic bronchitis, with peribronchial thickening and without parenchymal infiltrates, may be present in some cases. Hilar adenopathy is present and may persist for considerable time after the pulmonary lesions have resolved.

The constitutional symptoms are usually not severe in proportion to the degree of pulmonary involvement. Cough, low grade fever and anorexia are usually present. In cases uncomplicated by bacterial infection, a white, mucoid sputum containing grayish flakes may appear. Geotrichum can be cultured from the sputum on Sabouraud's medium and identified by the rectangular arthrospores.

The clinical course and roentgenologic appearance of bronchopulmonary geotrichosis in 2 children aged 6 and 4 years are described. A 2-year-old sibling and both parents also reacted positively to the Geotrichum skin test but showed no evidence of pulmonary disease. The father gave a positive reaction to histoplasmin and a negative reaction to tuberculin; a roentgenogram of his chest revealed multiple calcified areas in the left lung and hilar region which probably represented the healed stage of histoplasmosis and/or geotrichosis. Iodide therapy and roentgen radiation resulted in gradual improvement of the oldest child over a period of nine months. Iodide therapy alone resulted in a more rapid and complete clearing of the pneumonic process in the younger child during seven months of observation. 10 references. 5 figures. 2 tables.—*Author's abstract.*

Coccidioidin Skin Testing During Pregnancy and in Infants and Children. *Robert Cohen and Robert Burnip, Bakersfield, Calif.* California Med. 72: 31–33, Jan. 1950.

The authors were investigating the possibility of congenital coccidioidal infection existing in an endemic area. Two women, Negro and white, both having proved disseminated cases by the complement fixation test, gave birth to a premature and fullterm baby, respectively. The premature infant died and no spherules were found in the placenta or any indications of infection with coccidioides. There seemed to have been a passive transfer of humoral antibodies of the mother to give the complement fixation positive test. The white infant also had a positive transfer test which disappeared as shown by test a month later. Thus it appears that coccidioidal infection is not transmitted congenitally.

Two hundred twenty newborns were tested with coccidioidin antigen intradermally, 110 in the first twenty-four hours and the other 110 on the second day of life. Only two positive skin reactors were obtained whose x-rays showed no infection in the lungs. Forty-seven per cent of the mothers delivered at the Kern General Hospital were positive reactors to coccidioidin. They averaged nine and three-fourths years of living in the San Joaquin Valley, the endemic area.

Skin testing of 595 infants and children disclosed that coccidioidal infection may be acquired at a very early age—as early as one month. The incidence of infection increased gradually from the lowest age groups to the highest. One hundred thirteen children had positive reactions. Ninety per cent had lived in Kern County all their lives. 13 references. 1 table.—*Author's abstract.*

Simultaneous Nonfatal Systemic Histoplasmosis in Two Cousins. *Warren E. Wheeler, Valerie Friedman and Samuel Saslaw, Columbus, Ohio.* Am. J. Dis. Child. 79: 806–19, May 1950.

Histoplasma capsulatum was isolated from the blood of two children, cousins, who had generalized infections characterized by hectic fever, lymphadenopathy, splenomegaly, and anemia. Pulmonary symptoms and physical signs were minimal, but roentgenograms of their chests showed massive infiltration in one and great hilar lymphadenopathy in the other. Diagnosis was suspected because of positive histoplasmin skin tests and complement fixation and collodion agglutination tests of their serum by the methods of Saslaw and Campbell. Both boys recovered spontaneously and were well one year later. Pulmonary calcification was beginning in the one patient in whom roentgenograms were available. 14 references. 9 figures. 1 table.—*Author's abstract.*

24. Pathology, Anatomy, Bacteriology

Studies and Experiences With a Cocto-Antigen from Removed Tonsils (*Untersuchungen und Erfahrungen mit einem Kokto-antigen aus ektomierten Tonsillen*). *Max Frobenius, Bayreuth, Germany.* Ztschr. f. Kinderhlk. 67: 152–72, Heft 2, 1949.

Bacterial proteins and active agents from the necrobiotic foci in focal infections may act as foreign cell components. On absorption these substances may behave as foreign proteins and sensitize one or more of the more highly reactive tissues of the body. Intermittent influx of these substances may cause an antigen-antibody reaction resulting in disease. It should therefore be possible to reproduce experimentally conditions resembling those observed in cases of focal infection, by administration of a suitable antigen.

Since the tonsils are a common site of focal infection, an attempt was made to work with antigens from removed tonsils. The methods used are described in detail.

The antigen effect was tested in 80 normal children, in infants and in children operated upon for chronic tonsillitis. These tests showed that the substance had no toxic effect but was of an antigen nature. A very widespread sensitivity to the cocto-antigen was demonstrated, whether chronic tonsillitis was present or not. Skin sensitivity to this antigen was not present in newborn infants, but developed gradually so that by school age such sensitivity could be regarded as normal. Once acquired, this sensitivity does not remain constant, however. It may disappear and reappear suddenly. Also the degree of sensitivity varies widely. There was a higher incidence of positive reactions and of strong positive reactions in patients than in normal subjects. General sensitivity to this antigen is not present in normal subjects but occurs in large numbers of patients suffering from various diseases. The experiments on antigen-exposure suggest that numerous apparently quite different chronic diseases have the allergen-antibody reaction as an integrating pathogenic factor. 30 references. 6 tables.

25. Physiology, Biochemistry

The Cytology and Cytochemistry of the Adrenal Cortex. *Roy O. Greep and Helen Wendler Deane, Harvard Medical School, Boston, Mass.* Ann. N. York Acad. Sc. 50: 569–614, Art. 6, 1949.

The adrenal cortex displays clear-cut alterations in chemical and structural character whenever demands are made upon it. These changes can be demonstrated by special histologic and cytochemical technics.

The adrenal cortex is made up largely of large polygonal epithelial cells. These cells are arranged in concentric zones: the outer zona

glomerulosa, made up of loops and balls of cells; the zona fasciculata, having long columns of cells; and the zona reticularis, in which the fascicular columns become distorted and broken. The fasciculata has been subdivided further into a thin subglomerular region referred to as the transitional, lipid-free or "sudanophobic" zone, a broad and very fatty outer fasciculata containing the so-called spongiocytes, and an equally broad inner zone in which the lipid droplets of the cells are smaller and less numerous.

The cortex has an extremely rich vascular supply. It appears to lack innervation and seems entirely under hormonal control. The connective tissue stroma consists of a reticulum or argyrophil fibers which underlies the sinusoids and enmeshes the cells. The intracellular structures which can display variations are the mitochondria or chondriosomes, the Golgi apparatus, and the lipid droplets.

In experimental animals the mitochondria are exceedingly dense in the glomerulosa, less abundant in the fasciculata, and extremely variable in size and number in the reticularis. Some reticular cells are "light" and have only a few mitochondria, whereas in the "dark" cells the mitochondria are so densely packed that it is difficult to recognize other structures in the cytoplasm. The cytoplasm of the "dark" cells stains intensely with iron-alum hematoxylin. Because of this property, the "dark" cells are frequently called siderophils.

The form of the Golgi net seems to be a direct index of the secretory activity of adrenal cortical cells. The net is compact during inactivity, and diffuse and ramifying during marked activity.

The lipid droplets are soluble in organic solvents and appear as vacuoles after ordinary histologic procedures which involve dehydration. After prolonged treatment with potassium bichromate some of these fatty droplets are preserved and stain in much the same manner as do the mitochondria; these are called "liposomes." Both types of droplets have varying distribution in the different zones. The lipid droplets of the zona fasciculata are fine when the gland is in a state of activity, and much coarser when in inactivity. The droplets in the reticularis are probably products of fatty degeneration, since they fail to present the more specific ketosteroid reactions.

Some of the chemical methods which are used to identify ketosteroids have been adapted to tissue sections. Ketosteroids react positively with all of these procedures, but no one of the tests is specific for these compounds. The simultaneous use of several or all of these methods is a more trustworthy indication of the presence of ketosteroids than is any single reaction. In physiologic situations in which the production of hormones rises or declines, the tests wax and wane in parallel fashion.

In the adrenal cortex of the rat after hypophysectomy, the fasciculata and reticularis atrophy the most severely. The glomerulosa

broadens as the fasciculata shrinks and the lipoid materials and ketosteroids are preserved within it. The glomerulosa is thus not a conspicuous target organ of the anterior lobe of the pituitary. There is some evidence that the salt-conserving corticosteroids are secreted by the glomerulosa. The zona fasciculata, on the other hand, appears to be completely dependent on the hypophysis for maintenance of cell size and for the formation of secretions. The 11-oxy-steroids, which are concerned with gluconeogenesis and the release of antibodies, are secreted by the fasciculata.

In the stress or adaptation syndrome, as defined by Selye, the immediate reaction to an alarming stimulus is hypertrophy of the fasciculata with accompanying lipid depletion (the "alarm reaction"). Next, during the "resistance" phase, the lipid re-accumulates in the fasciculata and may be present in supranormal amounts. In the "exhaustion" phase, the fasciculata undergoes maximum hypertrophy and lipid depletion becomes extreme.

Injections of adrenal cortical extract or of the 11-oxygenated corticosteroids bring about a reduction in the size of the adrenal cortex. Such glands show an atrophy confined to the inner zones, and bear a remarkable resemblance to those of hypophysectomized rats. This shrinkage of the fasciculata is an instance of compensatory or disuse atrophy. The adrenals of normal rats treated with desoxycorticosterone acetate show a disappearance of lipid from the glomerulosa following prolonged administration.

The ascorbic acid of the adrenal occurs in all of the cells, distributed as fine granules in the zona glomerula and as coarse ones in the fasciculata and reticularis. There is less ascorbic acid in the glomerulosa than in the rest of the cortex. A concomitant decline in ascorbic acid and cortical steroids takes place in sundry conditions involving stress, and in scurvy.

The hypothesis that the cells of the adrenal cortex arise from the capsule and migrate centripetally in the cortical fascicles to die at the medullary border is challenged by the writers. From experimental and histologic observations they conclude that the cortical cells generally arise, secrete, and die in their respective zones. 71 references. 24 figures.

26. Psychology, Psychiatry

Deficient Development of Masculinity as a Psychosomatic Problem of Adolescence. *William A. Schonfeld, White Plains, N. Y.* Am. J. Dis. Child. 79: 17–29, Jan. 1950.

The findings of this report are based on a psychosomatic study of 256 boys, aged 9 to 16 years at the initial visit, who were followed for 6 months to 12 years. In each case either the child or a parent ex-

perienced concern over the sexual inadequacy of the patient's physique, although there was no evidence of gross congenital defects or endocrine dysfunction. All of the boys were capable of eventually developing spontaneous puberty, but presented personality difficulties and emotional conflicts due to fears of physical inadequacy.

Many of the variations in pubertal development commonly regarded as endocrine abnormalities are genetically determined physiologic variations and fall within the limits of normal variability of maturation. An apparent or actual delay in the onset of sexual maturation, the failure of initiation of the growth spurt of pubescence, or inadequacy of masculine development may lead to personality conflicts and psychosomatic complaints in the early part of the second decade of life. The psychodynamics associated with these personality disorders vary in individual boys. Castration anxieties and feelings of inadequacy play an essential role in the unconscious mechanisms. Conscious motivations seem equally important in this age group and are usually related to the individual's dependence on approval by his companions. Deviation from the group pattern leads to increased feelings of inadequacy with subsequent loss of self-esteem.

Treatment is discussed from both a psychiatric and a somatic viewpoint with emphasis on the need for altering the bodily defects responsible for the emotional conflicts. Physical treatment may consist of hormone induction of pubescence or plastic surgery, and is to be regarded as essential. Psychotherapy remains the mainstay of treatment.

With some cases the pediatrician is well capable of managing the problem but with others specialized training and skill are required. Reassurance was considered sufficient in about 25% of the boys studied. When psychoneurotic conflicts are already well advanced, reassurance generally falls short and it becomes necessary to turn to more methodical psychotherapeutic procedures. If the boy's expectations of himself are not too exorbitant, it may be possible to rebuild his entire estimate of himself by activities along creative lines.

The most effective therapy is a process of re-education accomplished by prolonged psychotherapy along psychoanalytic lines. Through the establishment of an interpersonal relationship between the patient and his psychotherapist, the boy's character structure unfolds itself, and the symbols by which he measures his estimate of himself are re-evaluated as he experiences them actively.

The author believes that pubescence and adolescence are promising periods of psychotherapy. The teen-ager's personality is dynamic and open to suggestion, and highly amenable to all external influences including those of psychotherapy. The duration and intensity of active psychotherapy seem to be less and the results more spectacular than in psychoneurosis of corresponding intensity in adults. This is particu-

larly true in boys in whom it is possible to modify the traumatic aspect of the situation, namely, the inadequacy of the masculine physique. 26 references.—*Author's abstract.*

27. Public Health, Epidemiology

Birth Rate Data for 1949. News Release March 20, 1950. U. S. Public Health Service, Federal Security Agency, Washington 25, D. C.

More children were born in the United States in 1949 than in any year except 1947.

The estimated number of registered live births for 1949, 3,581,000, exceeded the 1948 total of 3,535,068 by slightly more than 1%, but was about 3% below the number recorded for 1947, the all-time high year. The 1949 crude birth rate was estimated at 24.1 per 1,000 population (excluding the armed forces overseas) as compared to the final rate of 24.2 for 1948. Taking into account unregistered births, it is estimated that 3,729,000 children were born in this country during 1949. The total number of children born in the four postwar years, 1946 through 1949, was close to 15 million. This was virtually the same as the number of children born in the five previous years.

Final figures for 1948 show a drop of 14.3% in first births from the extraordinarily high level set in 1947. Although the number of second and third children born to women of all ages increased only slightly between 1947 and 1948, substantial gains were recorded in these births for young women. This suggests that many families formed during the war and postwar years are contributing to the high birth rates by the addition of a second and even a third child. Continuing high birth rates in 1949, despite the further decline in marriages between 1947 and 1948, point to new increases in the number of second and higher order births. 2 tables.

Mortality Statistics, United States, 1948. National Office of Vital Statistics, Federal Security Agency, Public Health Service, Washington 25, D. C.

The average length of life in the United States has increased to 67.2 years, according to figures based on a compilation of 1948 mortality statistics. The 1948 average length of life, the highest figure on record, was 0.4 years above the 1947 average of 66.8 years. The deaths and the death rates for each age group by race and sex in 1948 are shown in the table.

The death rate is still comparatively high among infants. It drops to a minimum for children aged 5 to 14, and then rises slowly with advancing age. The decline in the death rate of over 40% since 1940 has been recorded for children 1 to 4 years of age, while a decrease of over 30% was recorded for the ages 5 to 34 years.

In every age group the death rates for males are higher than those

NUMBER OF DEATHS BY AGE, RACE, AND SEX: UNITED STATES, 1948

(Exclusive of stillbirths and of deaths among armed forces overseas)

AGE	All Races			White			Nonwhite		
	Both sexes	Male	Female	Both sexes	Male	Female	Both sexes	Male	Female
ALL AGES	1,444,337	820,931	623,406	1,270,589	725,818	544,771	173,748	95,113	78,635
Under 1 year	113,169	65,151	48,018	92,034	53,297	38,737	21,135	11,854	9,281
1 year	8,612	4,717	3,895	6,948	3,848	3,100	1,664	869	795
2 years	4,256	2,338	1,918	3,423	1,902	1,521	833	436	397
3 years	3,302	1,861	1,441	2,705	1,541	1,164	597	320	277
4 years	2,645	1,503	1,142	2,154	1,247	907	491	256	235
5–9 years	8,671	5,110	3,561	7,241	4,344	2,897	1,430	766	664
10–14 years	7,092	4,332	2,760	5,743	3,613	2,130	1,349	719	630
15–19 years	12,989	8,093	4,896	10,042	6,568	3,474	2,947	1,525	1,422
	DEATH RATES PER 1,000 POPULATION								
ALL AGES	9.9	11.3	8.5	9.7	11.2	8.3	11.3	12.6	10.0
Under 1 year	35.0	39.4	30.4	32.2	36.4	27.8	56.5	63.1	49.9
1–4 years	1.6	1.7	1.4	1.5	1.6	1.3	2.4	2.6	2.3
5–9 years	0.7	0.8	0.6	0.6	0.8	0.5	0.8	0.9	0.8
10–14 years	0.7	0.8	0.5	0.6	0.8	0.5	0.9	1.0	0.9
15–19 years	1.2	1.5	0.9	1.1	1.4	0.7	2.2	2.3	2.1

for females. Except for the age groups over 75, they are higher for the nonwhite than for the white population.

Vital Statistics of the United States, 1946. Part I. Natality and Mortality Data for the United States tabulated by Place of Occurrence with Supplemental Tables for Hawaii, Puerto Rico, The Virgin Islands and Alaska. U. S. Public Health Service, U. S. Government Printing Office, Washington, 1948, pp. 219. Part II. Natality and Mortality Data for the United States tabulated by Place of Residence. U. S. Public Health Service, U. S. Government Printing Office, Washington, 1948, pp. 647.

The official statistics on births, deaths and stillbirths for the United States for the calendar year 1946 are presented in these two volumes. The data given in Part I are tabulated according to the place of occurrence of the events. Part II shows statistics of live births and stillbirths tabulated by the place of residence of the mother of the child, and of deaths by place of residence of the decedent. Because hospital facilities attract patients from surrounding areas, birth and death statistics by place of residence are better indices of fertility and mortality in a community than are data by the place of occurrence. In the introduction to Part I there is a discussion of problems in the collection and classification of vital statistics which affect the interpretation of data. In addition to the analyses of birth, death and stillbirth statistics, a section on life tables giving measures of relative longevity of the population and a section on marriage and divorce have been included in the official United States Vital Statistics volumes.

For the first time in the history of the country, the number of registered live births in 1946 exceeded 3 million. The 3,288,672 live births registered during the first postwar year represents an increase of 553,000 over 1945, and of 354,000 over the number of births in 1943, the previous record high. The crude birth rate for 1946 (23.3 live births for every 1,000 population including the armed forces overseas) was the highest in 25 years. The birth rate for 1946 was about 8% higher than the wartime peak of 21.5 per 1,000 population which occurred in 1943, and about 19% higher than the rate of 19.6 for 1945. The increased number of births in 1946 was more than enough to offset the decline in births during the last two years of World War II after the wartime peak in 1943. In 1946, 82.4% of the live births were attended by physicians in hospitals, and 12.2% by medical practitioners outside of hospitals. The remaining 5.4% had nonmedical attendance, the great majority by midwives. The increased attendance at births by physicians represents a continuation of the trend over the years. In 1935, only 36.9% of the registered live births occurred in hospitals.

The mortality experience in 1946 was extremely favorable. The crude death rate of 10.0 per 1,000 population excluding the armed

forces overseas was the lowest death rate ever recorded for the country. The previous low was 10.4 in 1942. Even allowing for the aging of the population, the mortality rate for 1946 represents a new low. The expectation of life at birth based on mortality data for 1946 is 65.1 years for white males, 70.3 years for white females, 57.5 for nonwhite males and 61.0 years for nonwhite females. Over the years, the death rate has declined at every age, the greatest relative decrease having occurred in the rates for the younger ages and the smallest in the rates for the older ages. Since 1900, the death rate for young children, 1 to 4 years of age, has decreased 91%, while the decline in the death rate for the group 75 years and over has amounted to only 20%. The downward trend has been particularly rapid in recent years due to the efficacy of chemotherapy and of the antibiotics. As public health problems, the infectious diseases have virtually given way to the so-called degenerative diseases, or diseases of the older ages. Further decline in the death rate for the infectious diseases may be expected, but the effect of such declines will be more than offset in the non-distant future by the increase in mortality from such causes as diseases of the heart, the vascular-renal diseases and cancer.

Mortality is lowest in childhood and highest at the two extremes of the life span. Although great progress has been made in the reduction of infant mortality, the death rate for infants under 1 year is higher than at any succeeding age up to 75 years and over. The most favorable period of life from the standpoint of low mortality is between 5 and 14 years of age. There were 111,063 deaths of infants under 1 year of age registered in 1946. This was 6,379 infant deaths more than had occurred in 1945. However, because of the phenomenal postwar rise in the birth rate, this increase does not represent an increase in the risk of mortality among infants. The infant mortality rate was 33.8 for every 1,000 live births which is the lowest infant mortality rate ever recorded in the history of the country.

The infant mortality rates for the individual states ranged from 27.2 per 1,000 live births for Utah to 41.7 for Texas and 78.2 for New Mexico. In general, the infant mortality rates tended to be highest in the Mountain, South Central, and South Atlantic Divisions, and lowest in the Middle Atlantic, North Central, Pacific and New England States. The mortality among male infants is greater than among female infants in the first 3 months of life. The mortality among infants is much higher in the first day of life than in any succeeding age group. The mortality of infants under 1 day of age was a third of the total infant mortality in 1946.

The postwar rise in the birth rate appears to have culminated in 1947 when 3,699,940 live births were registered. The crude birth rate of 25.8 per 1,000 population represents an increase of 10.7% over the rate for 1946. There was a drop in the birth rate in 1948, but both the

number of births (estimated to be 3,559,000) and the birth rate (24.4) remained at a high level. The mortality conditions in 1947 and 1948 continued to be favorable. The death rate for 1947 was 10.1 per 1,000 population and in 1948 the rate dropped to 9.9 (provisional figure), the lowest death rate ever recorded for the United States.

The infant mortality rate declined in 1947 and again in 1948. The provisional infant mortality rate of 31.8 per 1,000 live births was a new record low. The infant mortality rate for each succeeding year has been lower than that for the preceding year since 1936. Mortality statistics are valuable indicators of health progress and as such are of interest to the medical practitioner. Birth statistics, on the other hand, are usually only of indirect interest, except to certain specialists. However, the great change in the birth rate in recent years holds very important implications for pediatricians. The phenomenal increase in the birth rate during the war and postwar period has produced about 3,117,000 live births annually which may be compared with the annual average of about 2,276,000 births during the seven years prior to the war. The difference between these two figures, 841,000, represents the additional increase in the infant population that accrued each year on the average from the high birth rate during the war and postwar years. This rise in the birth rate will affect such things as the school population of the future and the patient load in pediatrics practice for a number of years to come.—EDITOR.

28. Respiratory System

See Contents for Related Articles

29. Skin, Teeth, Hair

Erythema Nodosum in an Eighteen-Month-Old Infant Which Led to the Discovery of Moderately Advanced Tuberculosis in the Mother. *Robert Orr Warthen, Washington, D. C.* M. Ann. District of Columbia 18: 572, 617–18, Nov. 1949.

A case of erythema nodosum in an 18-month-old infant which led to the discovery of moderately advanced tuberculosis in her mother is reported in order to stress the importance of searching for tuberculous contacts in all such cases. The clinical manifestations of this entity are probably the reactions of a sensitized individual to a wide variety of sensitizing or antigenic substances. These sensitizing agents may be bacterial, toxic, or chemical. The most frequently encountered agent is the tuberculoprotein of the tubercle bacillus, as shown by the finding of coexisting tuberculosis (diagnosed by chest roentgenograms and/or tuberculin skin tests) in the majority of cases reported. Other causa-

tive agents recorded in the literature are streptococcal infections, drug intoxications, coccidioidomycosis, lymphopathia venereum, gonorrhea, and syphilis. 4 references.—*Author's abstract.*

In Sweden and other Scandinavian countries erythema nodosum seems to be most commonly associated with tuberculosis, but in the United States it more often accompanies nontuberculous states. It is seen occasionally during acute rheumatic fever, but is not an indicator of rheumatic activity. Every child with erythema nodosum should be given a thorough diagnostic study for some other underlying disease or drug poisoning.—EDITOR.

30. Social, Economic and Organizational Problems

See Contents for Related Articles

31. Surgery, Anesthesia

Pulmonary Decortication for Fibrinofibrothorax and Empyema in Children. *Karl P. Klassen, Columbus, Ohio.* Surgery 27: 235–44, Feb. 1950.

In 10 children diagnosed as having fibrinofibrothorax and empyema and varying in age from 5 months to 12 years, pulmonary decortication was used successfully where conservative measures had failed to bring about sterilization and obliteration of the pleural space by pulmonary expansion. Decortication was performed under intratracheal cyclopropane oxygen anesthesia with ether induction. The fibrin and pus were removed and the cortical plate of fibrous tissue resected from both the visceral and parietal pleura. Intercostal water-seal drainage was maintained for 48 hours.

In 7 children a postpneumonic empyema had been converted into a sterile fibrinofibrothorax following an average of 30 days' treatment with sulfonamide compounds and penicillin systemically. Respiratory difficulty was present in all these patients. Physical and roentgenographic examination revealed obliteration of the involved pleural space, pulmonary collapse and early scoliosis. Moderate leukocytosis and anemia were present. Pulmonary decortication was followed by rapid and complete expansion of the lung.

In 3 children with staphylococcus aureus postpneumonic empyema, associated in one case with a bronchopleural-cutaneous fistula, treatment with sulfonamide compounds and later systemic and topical penicillin failed to sterilize the empyema space. Pulmonary decortication brought about rapid expansion of the lung with cure of the empyema. 6 references. 7 figures. 1 table.—*Author's abstract.*

Multiple Intussusception. Review of the Literature and Report of a Case. *Merle J. Brown and David F. Weaver, Davenport, Ia.* J. Iowa M. Soc. 40: 57–59, Feb. 1950.

A 3-year-old white female is reported who had been having abdominal cramps following the intake of food for several months prior to hospitalization. On the day of admission she developed severe persistent abdominal pain and profound shock. Laparotomy revealed nine distinct intussusceptions, which were reduced. The largest was 6 to 7 cm. in length while the smaller ones were 3.5 to 4 cm. The mesenteric lymph nodes were six to eight times normal size. The small bowel was spastic, dry, dusky red in color and sticky. Warm saline applied to the intestine caused immediate disappearance of these abnormal characteristics. The child recovered without complications. 16 references. 1 figure.—*Author's abstract.*

Management of Appendiceal Rupture in Children. *William L. Riker, Chicago, Ill.* Quart. Bull., Northwestern Univ. M. School 24: 49–53, Spring 1950.

Until 1930 there was a 21.6% mortality for ruptured appendices at this hospital. In 1935 the mortality dropped to 12.1% due to the adequate use of parenteral fluids and intestinal intubation. Over the past three years the mortality has been 3.5%.

Fifty-six patients were treated for ruptured appendices during this three-year period. In the two patients who died there was overwhelming diffuse peritonitis. One had an appendectomy and the other was not operated upon because of his terminal condition. In 45 there were no signs of localization and abscess formation. Immediate appendectomies were performed and the abdomen was drained if a pyogenic membrane was forming. Postoperatively antibiotic drugs were given generously: penicillin, streptomycin and often sulfadiazine as long as seemed necessary.

Eleven patients had abscess formation on admission. Eight did well on "conservative management" with antibiotic drugs and supportive therapy and subsequent prophylactic appendectomies were performed with ease. Three required drainage of their abscesses.

The surgeon must not be lulled into a sense of false security by the powers of the antibiotic drugs now available. An expanding periappendiceal abscess fed through a perforation of the appendix must still be treated by adequate and timely drainage. 5 references. 2 figures.—*Author's abstract.*

Solitary Polyp of the Rectum in Children (*Le polype solitaire du rectum chez l'enfant*). *Alfred Bensande.* Rev. gén. de chin. et de thérap. 63: 389–98, Aug. 11, 1949.

Solitary polyps of the rectum occur in infants and children; they are usually of the type of benign adenoma. They are, as a rule, found low in the rectum. Usually only one such polyp is present. If several are found, the possibility of polyposis involving the rectum and colon

should always be considered. The symptoms of solitary polyp are (1) hemorrhage, and (2) protrusion of the polyp through the anus. The bleeding may be relatively slight, with streaks of blood appearing on the feces, or it may be more abundant; it may occur daily or at longer intervals. If the tumor protrudes through the anus at the time of defecation, it usually reduces spontaneously when defecation is completed; occasionally it must be reduced by digital pressure. Anemia may be the chief symptom of solitary polyp, as the result of continued microscopic bleeding when blood is not visible in the stools. Whenever there is any bleeding from the anus, or an anemia without evident cause in a child, the possibility of rectal polyp should be recognized and a rectal examination made, digitally and by a proctoscope. When polyposis is suspected, an x-ray study is needed. 2 references.

32. Tumors

The Use of ACTH and Cortisone in Neoplastic Disease. *O. H. Pearson, L. P. Eliel and T. R. Talbot, Jr., Sloan-Kettering Institute and the Memorial Hospital, New York, N. Y.* Bull. New York Acad. Med. 26: 235–39, April 1950.

The authors have already reported that the administration of ACTH or cortisone acetate to patients with lymphoid tumors resulted in a temporary regression in the size of enlarged lymph nodes and spleens. These observations were made on 4 patients with chronic lymphatic leukemia, one with follicular lymphosarcoma, and one with Hodgkin's disease. In every patient the tumor masses recurred in ten days to three months after discontinuing the hormones. Metabolic studies provided evidence that tumor tissue was actually destroyed during treatment. Two patients with leukemia and one with lymphosarcoma have shown a second response to therapy. No obvious effect of ACTH on tumor growth was obtained in a patient with carcinoma of the prostate or in one with carcinoma of the breast. Further observations have failed to uncover any benefit in 6 patients, one each with carcinoma of the breast, embryonal carcinoma of the testis or adrenal, Ewing's tumor, plasma cell myeloma, rhabdomyosarcoma, and carcinoma of the pancreas.

ACTH was given to 5 previously untreated patients with acute leukemia, 3 children and 2 adults. Remissions occurred in all. One of the children had acute lymphatic leukemia; the other 4 had acute granulocytic leukemia. ACTH was given in a dose of 50 mg. daily to children and 100 mg. daily to adults for periods of 24 to 30 days. Every patient exhibited symptomatic improvement within the first few days of treatment. The enlarged lymph nodes shrank rapidly and the size of the enlarged spleens and livers decreased. Hemorrhages ceased within the first few days. All patients developd a voracious appetite during the first week of therapy.

The first sign of hematologic improvement was an increase in the maturity of the circulating white blood cells. This was noted on the fourth to sixth day of treatment. The reticulocyte count rose on the fifth to eleventh day, with maximum responses of 10 to 20% during the second to third week. Platelets increased on the ninth to seventeenth day. The three children had initially subnormal white counts varying from 650 to 3,200. These counts rose slowly, reaching normal levels after three to four weeks of therapy. The bone marrow first showed an increase in erythropoietic activity, apparent on the fourth to eighteenth day. The maturity of the myeloid cells seemed increased on the eleventh to twenty-first day. None of the patients had a complete disappearance of abnormal cells from the bone marrow or peripheral blood.

At the time of this report the duration and extent of remissions could not be given. One child was still in remission five weeks after stopping ACTH. Another child developed clinical and hematologic relapse three weeks after stopping ACTH and improved when ACTH was again administered. One child with acute leukemia has shown a good remission with the use of cortisone.

These studies indicate that remissions can be induced in acute leukemia of both children and adults with considerable regularity by the use of ACTH, but these remissions are incomplete and temporary. 1 reference. 2 figures.

Brain Tumors in Children. 1. General Considerations. *A. Earl Walker, Baltimore, Md. and Theron L. Hopple, Toledo, Ohio.* J. Pediat. 35: 671–87, Dec. 1949.

A series of 100 brain tumors in children is analyzed. There is a marked predilection for tumors to occur along the neural axis in the posterior fossa. Many tumors commonly seen in adult life—pituitary adenomas, meningiomas, acoustic neuromas—occur rarely if at all in childhood. The symptoms of brain tumors in children are chiefly those of intracranial hypertension, although focal manifestations may be present. The growth of the tumor within the intracranial cavity is compensated for by a decrease in the cerebrospinal and ventricular fluid, interstitial fluid and blood in the intracranial cavity. The brain fills all nooks and crannies ordinarily occupied by cerebrospinal fluid. Herniation of the mesencephalon or medulla may depress vital functions. The differential diagnosis of brain tumors is discussed. 15 references. 7 figures. 2 tables.—*Author's abstract.*

Clinical Aspects and Treatment of Sympathogonioma on the Basis of Five Personally Observed Cases (*Klinik und Therapie der Sympathogoniome an Hand von fünf eigenen Beobachtungen*). *Heinz Weicker, Heidelberg University Pediatric Clinic, Heidelberg, Germany.* Mschr. f. Kinderhlk. 98: 3–15, Jan. 1950.

A detailed description is presented of 5 cases of sympathogonioma (neuroblastoma) in infants and young children. Because there is such diversity in types and location and symptoms, differential diagnosis presents many difficulties. Infiltrating tumors may cause digestive symptoms, constipation or diarrhea. Metastases may be palpated through the rectum. Sympathogonioma must be suspected in all cases presenting fixed painless tumors located paravertebral in the epigastrium, or para-aortal or retroperitoneal in the pelvis. A large percentage of these tumors can be diagnosed by sternal puncture. Glandular biopsy is less helpful.

Surgical extirpation and roentgenotherapy have been the customary treatments. Fanconi reported one cured case. Both the primary tumors and metastases are radiosensitive. In some cases the primary tumor has been removed after x-ray treatment of the metastases. Most patients die within a year. Urethane and nitrogen mustard have also been tried in small doses. Urethane was given in doses of 1.5 to 2 Gm. daily for five days. If the tumor tissue showed little or no reaction this treatment was repeated after an interval of eight days. This treatment caused no anergic collapse due to agranulocytic pneumonia or other cocci infections. Clinical and roentgenographic improvement was striking.

In one case transition to nitrogen mustard therapy brought about one more remission lasting also only a few weeks. The improvement was likewise manifested in increased uric acid excretion. X-ray therapy in urethane-resistant cases did not yield encouraging results. A varying degree of liquefaction was noted following administration of urethane. The primary tumor appeared more resistant than the metastases. In order to avoid dangers to myelopoiesis, dosage must be carefully controlled. Abundant blood transfusions are of benefit.

The author feels that in spite of its adverse effect on granulopoiesis, urethane appears to have the best therapeutic outlook. Only 1 of the 5 patients in this series survived and is now under ambulatory control. 15 references. 2 tables. 5 figures.

ACTH, cortisone and the folic acid antagonists must be added to the roster of new forms of therapy for neuroblastoma. Urethane is not much used in this country but perhaps should be given a more extended trial in the light of the author's claim to good results with it. Despite the poor prognosis, every child with neuroblastoma merits an attempt at surgical removal of the primary tumor and subsequent irradiation or chemotherapy.—EDITOR.

Roentgen Therapy in Neuroblastoma. *M. H. Wittenborg, The Children's Medical Center, Boston, Mass.* Radiology 54: 679–88, 1950.

A series of 73 infants and children with neuroblastoma is reviewed. Of these, 80% occurred within the first five years of life. The most fre-

quent site was the upper abdomen. In 60% evidence of metastasis was present at the time of diagnosis. Skeletal metastases predominated. Liver metastases were present in 14 patients, being the sole secondary site in 8.

Susceptibility of neuroblastoma to x-ray is extremely variable. Cures have been reported with very small doses. Larger initial doses (800 to 1,200 r) are preferred. Immediate postoperative roentgen therapy was practiced without waiting for wound healing. Preoperative therapy was not employed.

The results of therapy are tabulated as the per cent surviving 3 years:

No therapy	Surgery Alone	Surgery & X-ray	X-ray Alone
10%	54%	54%	27%

Twenty-two patients (30%) survived 3 years or more in the entire group, and 20 of these were still alive, as long as 12 to 16 years later in some. The distribution of metastases was of more significance in prognosis than the site of the primary tumor. With skeletal metastases death occurred within a year regardless of therapy. Primary abdominal tumor with liver metastases alone presents an excellent prognosis, with 100% survival among 6 patients after 3 years.

The technic of x-ray therapy is presented in detail. 4 figures. 8 references.—*A. M. Bongiovanni.*

Acute Intestinal Obstruction Due to Lymphosarcoma of the Ileum in a Child Aged 5 Years. *Constance M. Ottley, Howe, England.* Brit. J. Surg. 37: 247–48, Oct. 1949.

A boy 5 years of age was admitted to the hospital for supposed acute appendicitis, having had abdominal colic for 12 hours. He had vomited three times and the bowels had not moved. There was a tender mass in the right iliac fossa, slight muscle-guarding and no fever. Several fleeting attacks of similar pain had occurred during the previous 2 years. Laparotomy showed the terminal ileum dilated to almost adult diameter and occupied by a chain of rounded objects, ending distally about two inches above the ileocecal valve, with a larger, soft mass. A small incision in the bowel disclosed twelve raw green gooseberries lying in single file above a mass of soft friable growth, almost completely filling the lumen. The peritoneal cavity contained no fluid, enlarged glands or metastases. After removal of the gooseberries the incision in the bowel was closed, the loop excised and end-to-end anastomosis done. Microscopic examination of the tumor showed lymphosarcoma infiltrating the muscularis widely. The child had 18 months of good health and then recurrence, confirmed by laparotomy, occurred in the retrocecal connective tissue. Deep x-ray therapy

failed to arrest the growth and death followed 21 months later. Autopsy showed the growth involving all but the first six inches of small intestine and half the ascending colon; it appeared as a gross thickening of the wall of the bowel. No ascites was present. No metastases or enlarged glands were found in the abdomen or thorax. 2 figures.—*Author's abstract.*

The Pediatric Bookshelf

Haemolytic Disease of the Newborn. *M. M. Pickles, D.M., Nuffield Graduate Assistant in Clinical Pathology, Radcliffe Infirmary, Oxford, England.* Springfield, Ill., Charles C. Thomas, 1949.

Here is a monographic summary of erythroblastosis in its relation to Rh which is critical, authoritative, and up to date. The author is well known for several important contributions to Rh immunohematology. The text is essentially a critical exposition of the current literature plus detailed personal observations on over 100 affected infants in 73 families. The pattern of the disease is discussed in terms of blood group incompatibilities and the reactions of the infant tissues to the maternal antibodies.

The treatment considered best is transfusion, the earlier the better. "Though many of the more anaemic infants will recover with simple, repeated transfusions, exsanguination transfusion in infants showing a high degree of sensitization of the red cells with little anaemia will cut short the period of morbidity."

Good descriptions are given of the newer serologic procedures, including the Coomb's test, maternal antibody titrations, and application of trypsin to red cells to facilitate agglutination in the presence of homologous antibodies.

The Market-Milk Industry. Second Edition. *Chester L. Roadhouse, D.V.M., and James L. Henderson, M.S., Ph.D.,* New York, McGraw-Hill Book Company, Inc., 1950. 344 pp. $7.00.

The growth of our cities, the development of city milk plants, and the farflung advances in milk technology have made the safe production and distribution of milk one of the great public health accomplishments of this century. More than 120 billion pounds of milk are now produced on the farms of the United States every year, and more than 40 billion pounds of this are consumed as fluid milk and cream in our cities and towns.

Physicians are less prone to take the safety and high nutritional quality of market milk as a matter of course than is the population at large, yet how many of us are aware of the complexity of the system which delivers fresh milk to every doorstep? It is most informative to peruse a text such as this excellent one, and note the myriad safeguards

which the dairy industry consciously employs. Market milk nowadays consists not only of A and B grades and certified, but also of homogenized milk, vitamin D milk, table and pastry creams, fat-free milk, chocolate milk, cottage cheese, ice cream, and miscellaneous other dairy products. An understanding of the public health aspects of milk calls for some understanding of such diverse matters as veterinary control, milk bacteriology, barn architecture and nutritional values, and technics of milking, cooling, refrigeration, transportation, insect control, pasteurizing, bottling, and chemical sterilization.

This book is intended primarily for the dairy industry. It may be deemed authoritative in that field. Its all-round coverage of the field makes it significant to the medical profession as well.

Mobilization of the Human Body: Newer Concepts in Body Mechanics. *Harvey E. Billig, Jr., M.D., F.I.C.S. and Evelyn Loewendahl, M.A., Ph.T.* Stanford, Calif. Stanford University Press, 1949. $2.00.

This book is a compact manual designed for physical therapists, teachers of physical education, and physicians interested in posture. Its general thesis is that faulty posture and postural defects are often due to or associated with excessive shortening of the body ligaments. Tests and exercises are illustrated which detect and remedy excessive shortening, stiffness or coordination. Mobility of parts is deemed fundamental to endurance, relaxation, and muscle power and immobility of the ligaments. A program of home exercises is described by which a young person exhibiting a lateral curvature of the spine or incoordinate patterns of movement can develop or improve his posture and kinesthetic sense.

Guide for Local Rheumatic Fever Programs. New York State Department of Health, Bureau of Maternal and Child Health. Albany, N. Y., 1949.

This guide outlines the types of children for whom a community rheumatic fever program is intended, the methods for finding them, the service needed and means by which these can be provided, and the basic standards and procedures for insuring the proper utilization of these services.

Influence of Solubility on the Practical Value of Calcium Compounds in Clinical Use

The value of calcium therapy, not only in calcium-deficiency states but also to prevent negative calcium balance during periods of increase need, e.g. pregnancy, lactation and period of rapid growth, is now universally recognized. For instance, *Sherman, H. C. (Handbook of Nutrition, Chicago, A.M.A., 1943)* states that calcium is the element most likely to be deficient in the American diet; further, Jeans, P. C. *(ibid)* believes moderate calcium deficiency is widely prevalent in childhood and usually aggravated during adolescence.

The "when" and "why" of calcium therapy, therefore, are clear and the question of greatest concern becomes: *What is the best source of this mineral element?* Milk is an excellent source but is not always practical; many patients cannot or will not take adequate milk. Moreover, dietary elements such as fats and vegetable oxalates interfere with calcium absorption from foodstuffs.

Therapeutic Calcium Compounds: To be suitable for oral use a calcium compound must be both well-tolerated and sufficiently soluble. According to Cantarow, A. *(Calcium Metabolism and Calcium Therapy, Phila., Lea and Febiger, 1933)* the extent of absorption of a calcium salt depends upon its degree of solubility.

Clinical experience has shown that calcium gluconate is well-tolerated, however its low solubility (only 3.3%) greatly limits its value. Recently a derivative, calcium glucono-galacto-gluconate, almost nine times as soluble (27.5%) was developed; this makes possible a preparation (called Syrup Neo-Calglucon) having a high calcium content completely dissolved in a limited volume.

Syrup Neo-Calglucon provides *high calcium content in a readily absorbable form,* excellent gastric toleration and invitingly pleasant taste (moderately sweet and orange flavored).*

Average Supplementary Dosage: One to two teaspoonfuls 2 hrs. after each meal. When the patient has a relatively calcium-poor diet the dosage should be increased, according to the need.

*One teaspoonful contains an amount of Neo-Calglucon equivalent in calcium content to 20 grs. of ordinary calcium gluconate.

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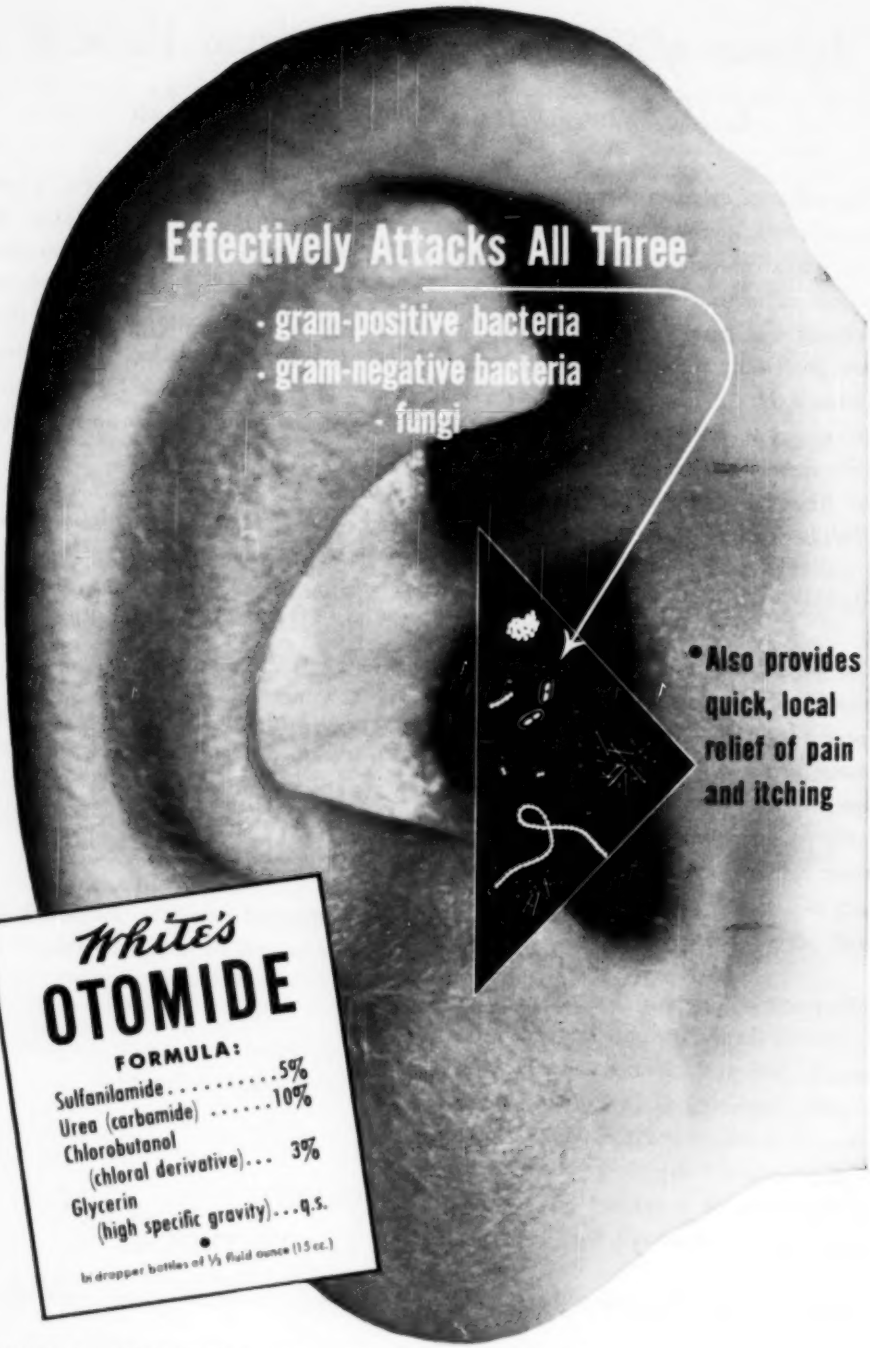
DIVISION OF SANDOZ CHEMICAL WORKS, INC.
68 CHARLTON STREET, NEW YORK 14, NEW YORK



WHITE LABORATORIES, INC., Pharmaceutical Manufacturers, Newark 7, N. J.

PET MILK... IS MILK

How easy it is to overlook this simple fact, that Pet Milk *is* milk . . . good milk to drink . . . and its usefulness extends far beyond bottle-feeding days.

Physicians think of Pet Milk *first* in terms of infant feeding. Its broad background of clinical trial, together with each doctor's successful use of Pet Milk in both difficult and normal feeding cases, has built this lasting recognition.

Yet in ever growing numbers children who have thrived during infancy on Pet Evaporated Milk continue to drink this good whole milk after weaning. The same qualities recommend it . . . its unfailing sterility, its soft, readily digested curd, its economy as compared to other forms of milk. Pet Milk, diluted half and half with water, is complete in all the food values of rich whole milk.

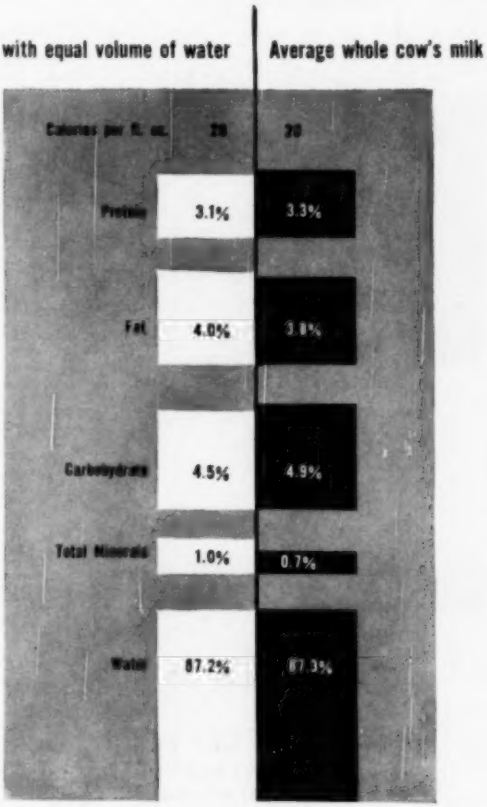
Of special importance, too, is the fortification of Pet Milk with pure crystalline vitamin D in the approved amount, which provides *automatically* during growing years the needed amount of this sunshine vitamin for *optimal growth and dentition* long after cod-liver oil days are past.

So when mothers ask the common question, "When do I change my baby to regular milk?," the wisest answer is "Pet Milk *is* milk. There is no better — no more wholesome kind of milk for your child through all his growing years."

PET MILK COMPANY
1422-H Arcade Building,
St. Louis 1, Missouri

Not just milk replacement but casein replacement...

Casein—and also lactalbumin—are frequently the cause of hypersensitiveness to cow's milk. This hypersensitiveness can be manifested by gastrointestinal upsets followed in time by eczema of a mild or acute nature. In such cases cow's milk of all types must be eliminated from the diet. Mull-Soy is a near equivalent for milk to be used in these cases.



A scientifically sound formula for avoidance of casein allergy

Stable—vacuum packed

High in unsaturated fatty acids essential for growth

Pleasant-tasting

A homogenized liquid, not a powder or a hydrolysate

For hypoallergenic diet in infants or adults look to

MULL-SOY®

The Borden Company

Prescription Products Division

350 Madison Avenue, New York 17

At drugstores in 15½ oz. tins.